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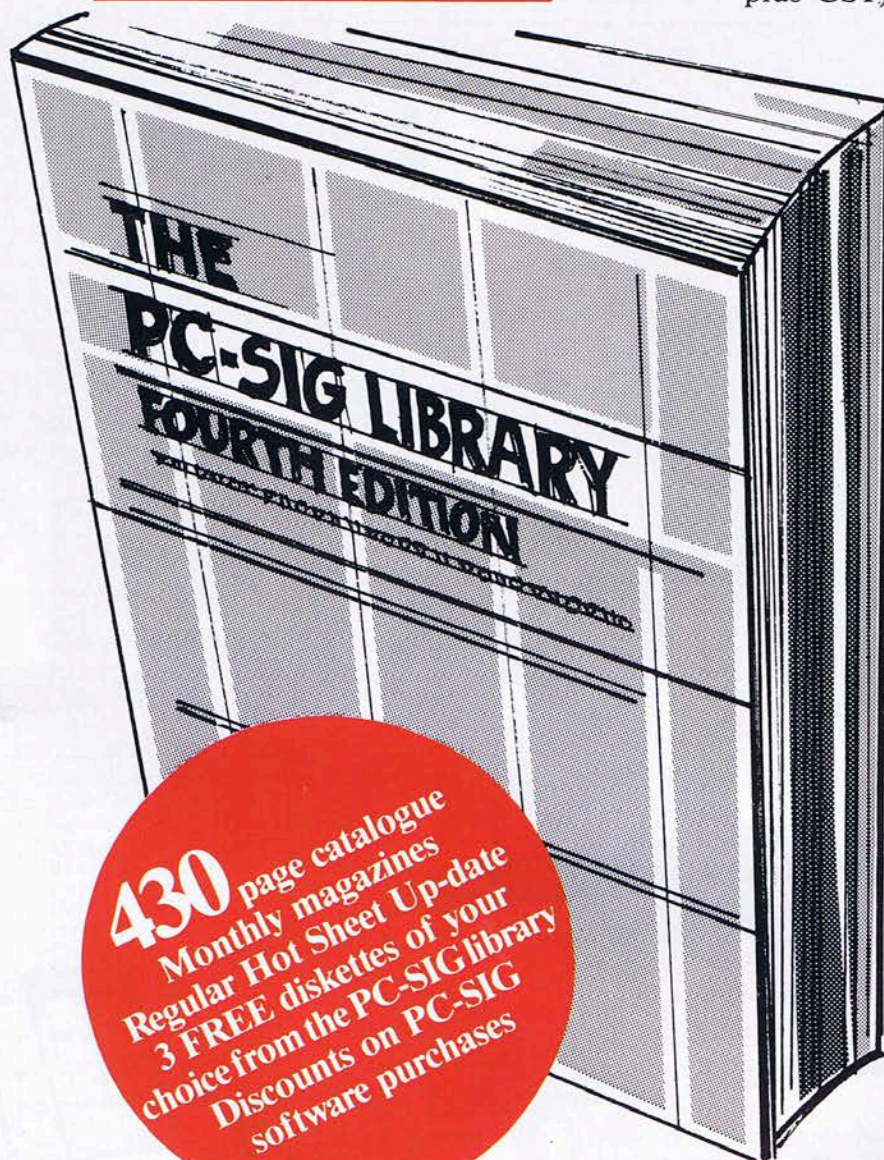
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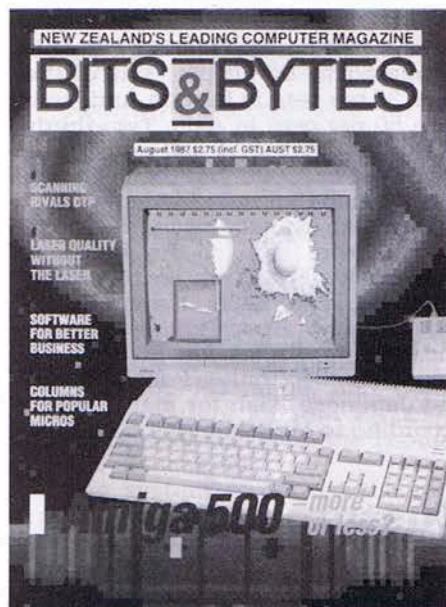
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Epson opens NZ subsidiary

Completing the development of its South Pacific marketing and support network, at the same time as further developing market opportunities in New Zealand, Seiko Epson Corporation has opened a local subsidiary of Epson Australia. Managing director of both companies is Mr Shuzo Isoda, who was responsible for the establishment of the Australian operation in 1983, and also for the creation of the Product Development Division in Sydney, concentrating on software development but looking at further research and development and local production of Epson products.

According to Mr Takao Sakuma, managing director of the parent Seiko Epson Corporation in Japan, speaking at the official opening of the Auckland office, the ideal production ratio was one-third undertaken in Japan, one-third in the lower-cost countries, and the final amount close to markets to overcome embargo and similar problems. It was definitely proposed to set up printer production in Australia.



Mr Takao Sakuma, managing director, Seiko Epson Corporation.

"Epson has a very strong printer base," said Mr Sakuma, "but many computer manufacturers now make printers, so Epson has moved into PCs to protect its own business. By the end of 1987 we will have a fast production IBM-compatible laptop."

Epson has brought out a laser printer with Ricoh engine and Hewlett-Packard Emulation, and also has its own engine under development. "But there is still a very strong, very stable demand for a dot-matrix printer," stated Mr Sakuma.

Current production is one million printer mechanisms per month, with 40 per cent of the corporation's gross

income in printers. Market share is estimated to be 20 per cent in the USA, 30 per cent in Europe, and more than 50 per cent in Asia. Two-thirds of the worldwide 15,000 employees are based in Japan, but the intention is to reverse that ratio in the future.

The Seiko (translated as "decision" in Japanese) side of the business goes back to 1882 as an importing company, and Seiko invented the quartz watch. Epson is more recent, and has its origins in English. "E stands for electronics, P for printers, and Japanese wish for many sons," according to Mr Sakuma.

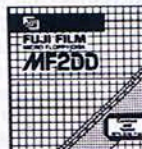
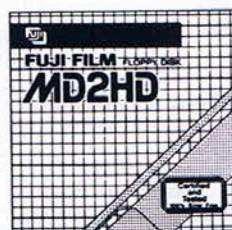
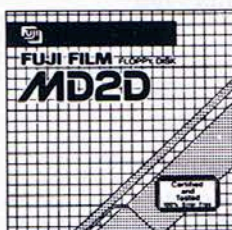
Customs sale

ICL has made the first sale of its newly released Series 39 Level 35 (ring a bell?) to the New Zealand Customs Department which took delivery of three systems in June.

The systems will be used for the development and implementation of the newly announced customer clearance system. ICL has introduced four new Series 39 systems at the lower end of the range. The systems have been designed for use in three separate market areas and to provide cost effective and easy upgrade paths for users.



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At a touch

Recently demonstrated in this country was a new move towards user-oriented technology in what is described as a natural way – by touching the object, text or symbols on the computer screen. The Locus Universal Touch Screen System, developed by the Melbourne high-technology group Locus System Engineering, is being distributed in New Zealand by Commodore for its Amiga and PC range, and Control Microcomputers for IBM PC XT/AT and compatibles, using the Thomson range of monitors.

The system comprises the touch screen itself, a polyester film coated on one side with a transparent, electrically-conductive film and on the other, exposed, side with polyurethane to improve scratch resistance and reduce glare; serial port and bus interface controllers to convert analogue touch co-ordinates into digital equivalents; and calibration and sample Touch Start software. Touch Screen Application Generator (TAG) software and video/audio interface are also available.

Screen activation is by pressure – a maximum of 12 ounces for a "low durometer, large radius stylus" (finger), and less than 3 ounces for a "high durometer, small radius stylus"

similar to a ball-point pen. Standard deviation of positional error is less than 0.080 inches, and durability is in excess of a million touches at any one point with a finger-equivalent stylus.

When combined with creative computer graphics and video disk, the Locus Touch Screen is expected to bring a powerful range of applications for public information access, commerce, industry and education, to both the user and program designer.

DTP reaches the papers

Newly installed in the offices of the twice-weekly *Waitomo News* is New Zealand's first full desktop publishing system using microcomputers for all production stages of a newspaper. Apple Macintosh equipment is used, the Otorohanga office having two Macintosh SEs connected to the main Te Kuiti base by modems for direct text entry, while Te Kuiti has a 20Mb hard disk SE network server and two more SEs driving megascreeens, three Macintosh Plus units and such peripherals as scanner and LaserWriter.

All accounting is being done on the system and Desktop Publishing Systems Ltd, which provided the equip-

ment and all training and technical support, is also working on software for classified advertising, the only custom-written programs required.

Waitomo News is an independent family-owned newspaper and has negotiated a new union agreement to allow it to be the first paper in the country to provide journalists and compositors with direct text entry and formatting. The move was undertaken largely because the existing typesetting was in need of replacement, and the new system is expected to pay for itself within two years.

Star laser

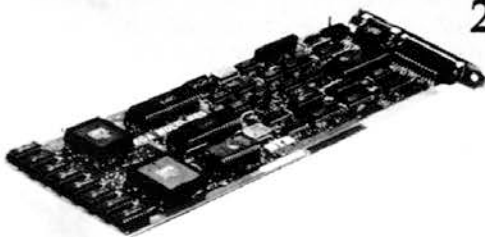
Star Micronics has announced plans to release the Star laser printer here.

The laser printer is based on the Canon LPB-SX engine and offers 300 dot per inch resolution and eight pages per minute speed. It has 1 Mbyte of resident RAM and serial RS-232C and RS-442 interfaces as well as the Centronics Standard parallel interface. Resident emulations include HP LaserJet Plus, Diablo 630 ECS, IBM Proprinter and Epson EX-800.

A price for the laser is yet to be confirmed but it looks like being around \$5,500.

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Price war declared?

In a move to strengthen its hold in the PC market, Auckland-based Computer Imports has again slashed hardware prices – a move that is likely to impact hardware distributors throughout the country.

Where companies once looked to IBM as the market leader which established the market price for PCs, and positioned themselves accordingly, it is the likes of Computer Imports they are now watching closely.

The new prices, effective July 27, were apparently made possible with the strengthening of the New Zealand dollar and because CI company was able to negotiate better buy prices with their suppliers because of the volumes they have been purchasing.

Marketing manager Grant Hackett says CI is attacking the market aggressively: "We did the same thing 12 months ago but the price advantage we had then has been eroded by the competition during the past year."

He said they would be launching a national campaign to promote the move and that special terms would apply to the new prices being offered: payment must accompany all orders and delivery would be up to three weeks. The product will continue to carry 12 months parts and labour warranty.

Examples of the new retail prices with the previous prices in brackets, are: XT2 \$1800 (\$2750), XT286 \$3200 (\$5800), AT386 \$6500 (\$15,500), HP-compatible laser \$5,500 (\$5900).

BOS-DOS soon

Just released is BOS V6.0, able to be run on bigger machines and networks and offering such features as concurrency on all screens, field editing on all prompts, various pop-up commands and messages to be sent to individual or all users. V6.0 also contains new features for use by programmers and system builders, including help guides, screen handling routines and text editing.

BOS/Writer V2.0 has also been released, offering up to 4,000 on-line documents, interface to BOS/Speller and bigger libraries, and current developments are Sales Suite V3.1 and Nominal Ledger V3.0.

BOS will now support the VAX series (MicroVAX 2 and larger), and versions to run on 80286 and 80386 MS-DOS machines are expected to be released shortly, as Business Operating Systems acknowledges the need for users to have continued access to the vast range of other software in current use.

Marriage of convenience

Hardware distributor Datamini has moved in with Mail Order Systems – and the formal ceremony merging the two companies is likely to happen during the next month, according to Tony Butler, manager of the newly established hardware division.

MoS had been selling and renting the Singapore-manufactured Datamini range during the past year and had been a major dealer for Datamini. However, Datamini had become disenchanted with the hardware, which they found required considerable rebuilding before it could go to market; they moved to secure supply from the Korean-based Goldstar manufacturer.

Datamini has gone through a number of changes in recent months with former Managing director Paul Capper leaving on the eve of the merger and newly appointed manag-

ing director Tony Butler taking up the cudgels as marriage broker.

Butler says the new range of hardware will be marketed under the label Datagold, including the former Datamini laptop. "We're continuing to handle the laptop. It's manufactured in Hong Kong and is a reliable product well suited to the market here. It was the product from Goh in Singapore which we dropped: we were virtually rebuilding it before selling it."

The warranty work for the Datamini range will be taken over by Profile Computers, which is also selling the Goh Electronics range here. However, Butler is confident that existing users have product that has been extensively rebuilt before it was sold and that they are unlikely to experience any problems.

Wellington opening

Opening early this month is Wellington's biggest computer sales facility, as Pacific Computers expands southwards. The 2,500 sq ft showroom and 5,500 sq ft attached warehouse and service area is located in Hutt Road, just off the motorway at the Petone exit, a few minutes from the Beehive.

"We've been selling 10 computer systems every week to Wellington by mail order," says Pacific director Maurice Bryham, "and we've been trying since the beginning of the year to establish our Wellington division, but staff numbers have been the problem until now."

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The drive in peripheral products

Shows fit the market

Brisk trading at the Wellington Computer Show and the earlier Computing 87 in Auckland is reflecting a trend in New Zealand that goes against the reported trends of overseas computer exhibitions.

Buyers are attending the shows – people with cheque books in their hands and a willingness to spend money. What's more, they are discerning buyers with a fair idea of what they are looking for, according to NEC's Nigel Ekins.

While shows three years ago attracted people in their droves, those attending were frequently "tyre kickers" according to distributors. Today they are in no way overawed by the industry and its offerings – they are asking penetrating questions and comparing what's offering. What's more, numbers attending the shows are not reducing greatly (Auckland 12,500; Wellington 12,000).

In the personal computer field there is still a price driven approach to purchasing, a priority that rates higher on the buyers' list than across the Tasman according to suppliers I spoke with at the PC Show in Sydney and to distributors in Melbourne and Sydney.

While Comdex in the States may not be attracting the vast crowds of people it did a few years back, even there distributors feel as Kiwi exhibitors do: they are getting prime prospects through the gates.

And let's face it... it takes more than a passing interest in computing to drive, fly or even (and some did) bus your way to the Overseas Terminal in a city where the climate has a notorious reputation in June.

Exhibitors' comments on the business they did during the show were very enthusiastic, with some reporting significant sales in the \$10,000 plus league and many committing to next year's show already.

Talking with the public attending the shows, they are coming for a variety of reasons, amongst them the opportunity to compare products they've heard/read about; to talk with distributors and see product demonstrated; to compare competing product and prices in one environment; to attend the seminars that are

a feature of these exhibitions; and to get the lowdown on product, trends and sometimes, the nitty gritty of how products work.

Certainly, as organisers of these three shows, *Bits & Bytes* will continue its commitment to present the latest produce and information from the industry. Already, a number of industry organisations are becoming involved and are likely to expand the offerings.

Although only 45-60 minutes long it seems these seminars provide the opportunity for an overview of product and applications that busy showgoers can fit into their schedules.

Networking and desktop publishing were very popular at both shows so far this year and while most people are familiar with the basics of word processing or spreadsheets there is always enthusiasm at looking at the latest offerings in these fields.

The Christchurch Computer Show will be held in the Town Hall there November 4-6.

US deal

The NZ-based software company PROGENI has signed a \$450,000 contract in the US.

It will design and develop an on-line order processing system for the Barber-Colman Company, manufacturer of electronic, tooling, precision instrumentation and industrial environmental control systems.

Progeni's fourth generation language package will be used in the development of the system. Personnel from both companies will work on producing a system specific to the manufacturer's needs.

A crucial element in closing the sale was the ability of PROGENI's fourth generation language to link into existing systems. "Barber-Colman wished to retain significant parts of their existing systems, preferring to upgrade them," PROGENI's Executive Director Merv Robertson, said. "This is emerging as a very clear trend in the software industry in the USA because of the very high costs of software development there."

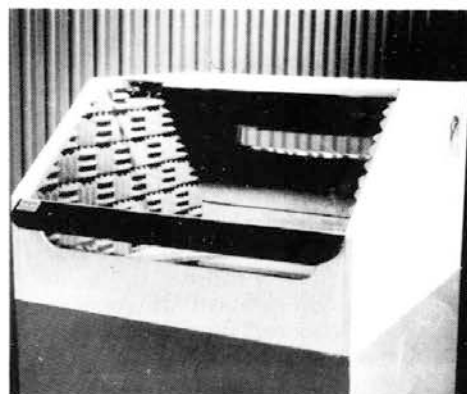
PROGENI first began exporting computer software to the USA in 1978. During the last four years sales for the package have taken off as corporate managements insist on greater productivity from their computer centres.

Noise reduced

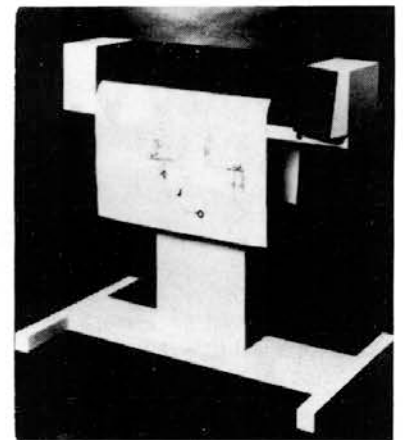
A new range of computer printer soundhoods is being manufactured by the Wellington-based Impact Services Group.

The range is designed and constructed and lined with Sonex acoustic foam which reduces computer printer noise by up to 75 percent, according to director, Eddie Nickless.

There are four standard models in the range, to suit most printers from desktop printout machines to large printout machines and word processing units handling maximum paper volumes. Special versions can be manufactured to order. All standard models are fitted with fans and foam-lined bottoms, and the rear slot is provided with paper guides.



New CAD plotter



A new CAD plotter with a full function keyboard, lighted display and servo motor operation for accurate and high speed plotting has been introduced in New Zealand by Dataplot Peripherals Ltd.

Priced from around \$10,000, the plotter is the latest from the American company, Enter Computer.

The single pen SP 1000 offers A4 to A1 sized operation for engineering, architectural and scientific drawings on standard ANSI, ISO or architectural size bond, vellum or film media. It emulates HP/GL plotter language and most micro-cad packages such as AutoCAD and VersaCAD can be used with it. With RS232C serial interface the plotter will connect to most computers, and the plotter uses HP-compatible pens.

STC increasing local input

by Steven Searle

Standard Telephones and Cables (STC), the US-France based manufacturer of telecommunications equipment and ITT computers, is increasing its research and manufacturing activities in New Zealand. STC NZ Ltd is a subsidiary of the multi-national's Australian company, and the Australians are intending to develop closer links with the NZ plant at Upper Hutt which employs 196 people.

STC Australia's managing director, Bill Page-Hannify, was at the local manufacturing base last month for the presentation to Telecom of STC NZ's one-millionth Pert phone and the near completion of a five-year contract of supply of the push-button phones. A new three to five year supply contract, for other voice transmission equipment, was announced by Telecom, and Page-Hannify announced increasing local input into STC products here, and closer research links.

The new contract with Telecom NZ is starting with local input of 40 per cent of the completed product, but this will rise to 70 per cent, despite the contract actually being won by STC's Australian arm. The research link is being initiated with the visit of three STC engineers from the Upper Hutt plant to STC's Sydney laboratory.

"We want such abilities closer to our customers, and to be better able to provide what local customers want," says Page-Hannify.

The same rationale was behind STC Australia's investment of \$30 million in research and development last year, mainly in the design and launch of new products. It was a factor in STC being the leading manufacturer of communications equipment in Australia, says Page-Hannify.

"I am sure Telecom's business will grow, and not just in phones," he says, looking ahead in New Zealand.

Meanwhile, ITT computers are

accounting for one-third of STC's turnover in both Australia and New Zealand. Page-Hannify says their market focus is the service organisation needing a network of micro-computers and communications devices.

Previously the ITT networks could be driven by an IBM mainframe, but with the introduction of STC's own mini-processor in Australia, Page-Hannify is hoping to sell the concept of central processing linked with "a convergence of communications abilities". In the long run, he says, STC's communication abilities will be an advantage in the design of future computing systems. The new mini, he points out, pitches STC and its ITT computers directly against Wang and DEC.

"Within one year we have made pleasing progress... we have done as well as the others when they were starting out."

New Wyse range, expansion

Recently introduced by Wyse Technology is a new range of IBM-compatible microcomputers based on the familiar Intel 80286 and 80386 processors, with performance upgrades available by replacing CPUs which are mounted on plug-in boards.

The four new products include the 16MHz WYSEpc 386 model 3216 and three versions of the 286 family: the 8MHz model 2108, 12.5MHz 2112 and 12.5MHz, zero-wait-state model 2214. At the same time, Wyse announced its WY-995, an intelligent multi-user interface board allowing users to connect up to eight peripheral devices.

According to Alan Stoops, Wyse's newly-appointed regional sales manager for Australia and New Zealand, the modular systems architecture offers flexibility for distributors and reseller customers. "It also allows Wyse to implement technical advances quickly, and to configure cost-effective custom solutions for our OEM customers."

All models have front-panel controls and 16-character LCD system-status display to indicate such func-

tions as date, time, processor speed, disk access, and system performance and messages. An enhanced MS-DOS 3.2 is standard, with disk-caching software to improve hard disk operations by up to 40 per cent, and a software security system allows users to lock the system via software to prevent unauthorised access, even during processing.

"If the equipment looks good, people relate better to it," said Steve Hotzman, Wyse director of product marketing, when the products were launched in Auckland. "The 286 model 2108 is a small-footprint AT aimed at the XT market, and the 386 is really only justified in CAD/CAM and multi-user systems."

On the controversial subject of OS/2, he said, "The new operating system will become the foundation for a new generation of PCs, and will support both today's standards and future standards. Although the market is not totally under IBM's control, most software vendors have indicated they will support OS/2."

Wyse is the number two (to IBM) supplier of terminals in the world, which still represents 52 per cent of

company turnover. On the world-wide front, Charles Comiso, vice-president of international sales, reported that the aim was to have 50 per cent of business outside the USA by 1990.

"New Zealand is 30 per cent of the total Australia/New Zealand market," he said. "We're looking for product trends in this market, and also looking for software locally. Our policy is to establish a presence, and let people see the support for distributors. Wyse doesn't sell to end-users or dealers."

"The specific needs here are different from those of the USA. For example, in France we established a presence in Paris with products built for the US market. By having the technical people there all things like manuals, keyboards and cables are now French-aligned. In the same way, by having technical people here, we're able to fulfil the needs of the local market."

Wyse is represented in New Zealand by Imagineering, the company expanding into hardware from its more familiar software base.

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Major POS contract to ICL

The Hannahs footwear chain has signed a major contract with ICL New Zealand for the supply of point-of-sale terminals in its 120 stores throughout the country. All Wellington outlets are expected to be operating by this month, starting with the Lambton Quay and Willis Street branches, with the remainder of installations to be completed within a year.

The system is based on the ICL 9516, and a major factor in the decision was the success in Australia of similar operations with the Katies retail clothing chain and Williams the Shoeman in Melbourne, a similar operation to Hannahs. ICL was able to incorporate all the existing internal procedures into the system, cutting down on potential staff input errors, and the POS operation will involve sales data from the 9516 terminals being transmitted overnight via a dial-up link to a Hannahs mainframe.

AT management service

A new company dealing in technical management services has been announced by the Minister of Science and Technology, the Rt Hon R J Tizard and the Minister of Trade and Industry, the Hon David Caygill.

The service will be a commercial consultancy operating in a brokering role to help companies take practical steps to introduce technologies.

The company grew out of a proposal by the Manufacturers' Federation and the Technology Advancement Trust. The ministers agreed to support the initial establishment and operating costs for the proposed service.

A provision for financial support of \$1 million has been made equally by the DSIR and the Trade and Industry Department.

"The service is expected to be fully operational and financially self-sufficient by the end of the 1988/89 financial year," the ministers said.

"The Government wanted to support the initiative because it recognised the service would have a beneficial impact on industry and lead to improved productivity, quality and international competitiveness," they said.

Mr Wayne Squires, former general manager of Hewlett Packard, appointed general manager. He will

IBM Virtual Machine/Integrated System (VM/IS) 5 and IBM VM/IS BASE Release 5

IBM Virtual Machine/Integrated System (VM/IS) provides an integrated software solution for intermediate and low-end System/370 environments. VM/IS consists of VM/IS BASE and nine optional application enabling packages containing 33 licensed programs. VM/IS BASE consists of VM/SP Release 5 and 12 other product functions. This combination of VM/IS BASE and optional packages provides integrated business, office, data base and engineering/scientific application solutions.

(From time to time the Bits & Bytes office takes delivery of some really scintillating press releases.)

be working from an Auckland office but the company will operate nationally.

The company will put together consultancy teams, determined by individual client needs, by drawing on a wide range of specialist business and technology management expertise available in both the public and private sectors. It is not intended to compete with existing organisations.

The consultancy team will sort out a problem and manage it through on behalf of the client company. It will provide an alternative to in-house research and development.

Laser drivers

Lotus has announced drivers for six laser printers and its distributor here, Imagineering, reports the product will be available this month.

The lucky six represent those most asked for by Manuscript users: the Laserjet Series II, the Xerox 4045, Laser CP 50, Canon LBP-8 A2 and II, IBM Pageprinter 3812 and Epson GQ-3500.

The HP driver will allow Manuscript to support a variety of packaged downloadable fonts and Lotus will modify its current support for the Laserjet+ and Laserjet 500+ to assist with downloadable fonts.

The drivers will be made available on one disk, along with documentation, to new and existing Manuscript users for a small handling charge.

Sepia clips

Data General's new laptop personal computer, the DATA GENERAL/One Model 2T, received instant success in New Zealand with a first-day order from New Zealand Life Insurance.

The initial order for 12 of the new version laptops running the Assurance Industry Marketing System (AIMS) will be used by NZL's life insurance representatives in the South Island.

AIMS is marketed and supported by Assurance Industry Marketing System Limited. The company belongs to SELWYN KENEALLY, who with 21 years in the industry, developed the product from scratch. AIMS includes a family income protection planner, retirement income planner and investment and financial planner.

Presently a further four New Zealand insurance companies are evaluating the product.

The DATA GENERAL/One Model 2T is IBM PC/XT compatible and incorporates a number of customer requests for enhancements including the addition of a backlight, superwist LCD screen (user-switchable to a conventional LCD screen), a dual-speed CPU which runs 80 percent

faster than previous models, a 1 hard disk, and internal, removable batteries.

An unprecedented one-year worldwide warranty for the new system breaks new ground in PC laptop reliability.

Data General Customer Engine is the first organisation in the computer service industry to offer such a warranty, which is honoured in over 100 countries. This means, for example, if the system was purchased in Hamilton, users can get it serviced anywhere one of the Data General worldwide service locations — from Alaska to Tokyo.

Announcing the DATA GENERAL/One Model 2T, Data General New Zealand Product Marketing Manager, TREVOR FORREST, said, "the introduction of the Model 2T provides Data General with a laptop with a price/performance which is even more competitive."

"Already we are seeing the emergence of insurance industry applications as one of the most intensive areas for laptop users. Accordingly, this is one of the key

Interesting that Data General, in their June 1987 newsletter, are talking about the DG One 2 model as "new". We reviewed the machine in July last year when we were told the company would be selling it direct to its corporate sites and as an up-grade to existing DG One users.

After that there were stories about supply problems and promotion seemed to fade. There you go then — old soldiers never die... and it looks like DG One 2 will be slicing its way into the hands of the insurance industry.

NZFP update

Site management systems at NZFP Pulp and Paper Ltd, following its establishment as a separate trading entity after reorganisation at Kinleith in April, are to be up-dated.

Consultants are to review the opportunities for introducing office and record management systems including microcomputers, graphics, local area network and optical disk storage techniques and the integration of this technology with existing equipment.

EXZEL Newsline

AUGUST 1987

KIWI ENTERTAINER USES EXZEL PC

Well known N.Z. entertainer Mr Billy T. James has joined the ever increasing list of people and companies using EXZEL computers in New Zealand (this list is rapidly approaching 10,000 users).



Gary Laselle from Computer Imports, installing Billy T. James' new EXZEL computer.

Billy T. will be using an EXZEL to keep track of his extensive "fan club".

The computer will allow him to maintain an up-to-date name and address list. It will also ensure that "fans" birthday cards are delivered on time. In addition, the computer will allow personalised newsletters to be sent to each and every "fan club member".

SECONDARY SCHOOLS RECEIVE HUNDREDS OF EXZEL COMPUTERS

In what must have been one of the proudest moments for a number of New Zealand's Secondary Schools, Computer Imports delivered

literally hundreds of computers nationwide as the culmination of the "NATIONAL SECONDARY SCHOOLS COMPUTER FUND RAISING PROJECT." In talking to Mr Trevor Press of Computer Imports' Educational Sales Division, he announced an extensive prize list relating to the project, incorporating both top performing schools and pupils. The recipients of the major prizes are as follows:

TOP SCHOOLS

Prospect College – Lower Hutt
Christchurch Adventist School – Christchurch
St Martin's Secondary School – Christchurch
Rudolf Steiner School – Hastings
Coromandel Area School – Coromandel
Tamatea High School – Napier
Rodney College – Wellsford
Buller High School – Westport
Pukekohe High School – Pukekohe

TOP PUPILS

Bruce Meyer:
Wellington High School – Wellington
Anthony Stone:
Wellington High School – Wellington
Jayne Stone:
Wellington High School – Wellington
M. Jagger:
St Marys College – Ponsonby, Auckland
Andrew O'Neill:
Wellington High School – Wellington
Julian Schollum:
Wellington High School – Wellington
Harrison:
Westlake Boys High School – Takapuna, Auckland
Jennifer der Malmarch: Tongariro High School – Turangi

Paul Scheffer:
Wellington High School – Wellington
L. Bader:
St Marys College – Ponsonby, Auckland
Heather Van Dynn:
Wellington High School – Wellington
Mark Kessel:
Queen Elizabeth College – Palmerston North



Quality control, checks each EXZEL before despatch to the Secondary Schools.

2 MILLION DOLLARS PROFIT BEFORE TAX ANNOUNCED

1986 has seen Computer Imports announce an increase in net profit before taxation of over 100%. This increase in profits has been achieved on a turnover of twelve million (NZ\$12,000,000.00) dollars. In achieving these results Computer Imports Ltd has broken all previous sales and profit records for the Company.

EXZEL SUPPORTS EXPO '87 N.Z. BUSINESS

**August 18,19,20, 1987.
Auckland Showgrounds**
See Computer Imports Ltd at Stands 129 – 132 where they will be featuring the latest on offer from the market leading EXZEL computer range.

Computer Imports Ltd

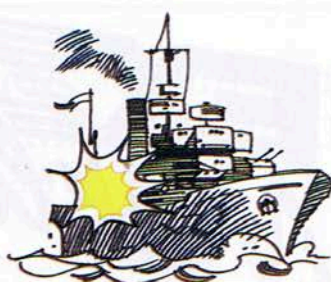
Head Office: EXZEL House, 42-48 Upper Queen St, Private Bag, Auckland. Telephone (09) 395-344. Telex 61196. Answer-COMIMP. Fax (09) 395-347.
177 Willis St, P.O. Box 2183, Wellington. Telephone (04) 851-774. Fax (04) 842-377.
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They're also taking advantage of our support service, which is second-to-none.

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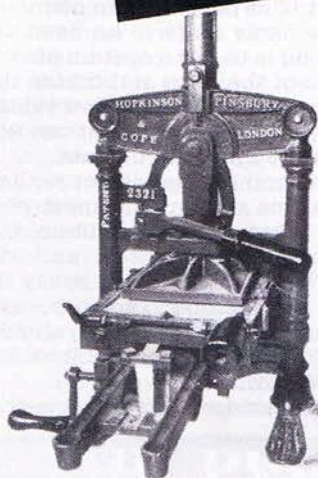
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The most reliable name in data communications.

Scanning – completing the circle and widening the options

Scanner – more useful than desktop publishing for some? Peter Ensor investigates Canon's IX-12 and is positive about its usefulness.

The old (Colenso's second printing press) and the new.



The computer age and its cliché of the 'paperless society' has sign posted an end to that idea, creating its own form of storage and reproduction. The interchange of information between these two worlds, however, has been a problem. Getting information out of the computer and onto the page was achieved long ago but reversing the process was not so easy.

Over the last decade there have been many methods used for getting a computer to read paper. Mark sense cards would be well remembered by programmers who would rather forget. Checks have been encoded with special inks and character fonts just for the pleasure of the computer. But, on the whole, the interface of the paper into the electronic world has been one sided.

The facsimile machine has been a major breakthrough in the conversion of a paper image into an electronic form but the conversation is always between two such machines. Optical Character Recognition (OCR) is the art/science of programming a computer to read and understand the written page. To do this a scanner is used such as the IX-12 manufactured by Canon.

This scanner, however, can be used for more than OCR. In its simplest form it can convert an image into an electronic form suitable for manipulation by a computer. Programs for displaying an image on the screen and manipulating it have been around for a number of years with names such as MacIntosh becoming well known for it.

The Canon IX-12 is supplied in two parts. The first is the scanner which measures 347 mm (W) x 295 mm (D) x 89 mm (H). It weighs only 7 kg but requires room for the paper feed and eject trays in front and behind respectively. The second part is the interface board which plugs into a standard PC bus.

This scanner scans the image at a resolution of 12 dots per mm. This compares with 3.85 dots per mm for a fax machine in its lowest resolution to 15 dots per mm on a superfine resolution. The IX-12 is able to convert the image into either 2 shades (black and white) when scanning text or 32 shades of grey when scanning a photograph. The resultant image when scanning on 32 shades is similar to that produced by a newspaper photograph. Scanning text or logos with only 2 shades means that the processed image is very clean. Scan-

ning the same image in 32 shades would result in "fly spots" over the image, with a very grainy result.

The number of scans required depends on the application. To read text takes only one scan while the scanning of a photograph could take two passes. The first scan is a quick one in two shades. From the image produced on the screen the image can be cropped to define the area of interest. The second scan is then done to produce the detailed image. The files produced from such a scan will vary greatly in size with 250kb not being unusual.

To process the images once captured, Canon supports an MS-DOS image editor called IEDIT. This program is not unlike PC PAINTBRUSH in its objective but has been enhanced to control the scanner. There is apparently a version of PC PAINTBRUSH out that also interfaces with the Canon scanner. Called PC PAINTBRUSH PLUS it has not yet been sighted in this country by the scanner's distributors.

IEDIT, while not dissimilar to PC PAINTBRUSH, did have some noteworthy additions. The most desirable of these was the ability to move the image on the screen automatically when attempting to draw off the side of the screen. The main use of IEDIT would be to touch

Review

up the images once captured. "Fly spots" can be removed and the pictures suitably embellished. From the IEDIT program the refined image can then be sent to CANOWRIT.

Total Document Processing

This program is the wordprocessor. It forms the nucleus of what is termed the Total Document Processing (TDP) system. The program merges the images from IEDIT or directly from the scanner with text to form the final document.

It is not billed as a desktop publishing program and certainly does not have the features that would be expected of one. It does however, have the necessary functions to produce high quality reports and papers. In reality it is probably more the style of program that many people would find useful than a full blown desktop publishing program. The images from the image editor can be mixed on the page with other images and text as required.

A window on the righthand side of the screen can be used to show the layout of the full page while a more detailed layout is shown on the rest of the page.

Also included in the program are

the features of a spelling checker with a choice of USA or English dictionaries, a table of contents generator along with an index generator and a word list generator.

For users with special applications that require special symbols, up to 48 such characters can be defined. There are no special fonts available from any of the programs supplied but styled title blocks can be incorporated into the report by scanning a page out of a style book and then manipulating the images as required.

One of the limits of the program is the number of columns that it can handle. The two column limit does however allow two A5 pages to be produced from a single A4 page printed in a landscape orientation. Each of the columns can print the text from the same or two separate files.

The only thing I did not like about the wordprocessor was the bold characters it used. To represent a bold character it would make the characters lines fatter but within the same character space. The use of highlighted text would have been preferred and I believe that this is the case with mono monitors. Otherwise the "what you see is what you get" objective was well implemented with italicised and underlined characters being accurately shown. The use of dots on the page where there was no

text is advantageous, especially for setting out tables.

The wordprocessor also has a line drawing feature where a pattern drawn on the screen using a diamond shaped symbol is converted into the appropriate line and corner symbols. Extending or modifying an existing box is done just as easily.

Font recognition

In addition to the above two programs is a program called READ-RIGHT. This program turns the scanner into an OCR system. There are two main methods of determining characters from a scanned image. The first is to program the computer with the likely fonts to be used and the second is to use a system of identification of the lines and circles that make up a character. The first system has the disadvantage that it can read only a limited number of fonts.

The second method is not without its problems either. The most common of these is that it will mistake small letters for capitals and visa versa. This problem can be easily corrected by running the processed document through a spelling checker such as the one incorporated into CANOWRITE.

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Shirwin Haines S 878

method of OCR is that it allows different fonts to be mixed on the same page and in the same line. aAnon boast that this machine will read over 250 fonts and at a speed of 600 words per minute.

The accuracy is reported to be up to 99.9% depending on the print quality. I was not sure what the brochure meant by "up to 99.9%", a simple inference being that it would not get the page absolutely right but it could get it very wrong.

From results published elsewhere it is believed that on a page of about 2000 characters it would get about 17 characters wrong; less than one percent.

Another advantage of this machine over others is that it will attempt to make sense of a logo at the top of the page and the date received stamp in the middle of the page. A series of garbled characters will appear in the file but it is certainly better than other scanners which give up, roll over, and flap when they get confused.

The OCR program is supplied with another program called FORADD. This is used to input the text from the READRIGHT file into a wordprocessor. It supports a number of wordprocessors including WORDSTAR and DISPLAYWRITE but will not work with Microsoft Word.

Once all the processing is finished,

it can be printed on a laser printer. The demonstration model had to have the correct font cartridge loaded in before it could be used on other than the standard type faces but this can be substituted for downloadable character fonts on other printers.

The time to print a page was dependent on the quantity of graphics that had been used but once the first page was printed further pages could be taken off at a fast rate. The manuals were not available for an indepth analysis but appeared sufficient. Of the things that I did not see there are two points that come to mind.

The first is the ability to include graphs from LOTUS or similar into the wordprocessor. it can handle images from the scanner but not from the file that LOTUS produces. This means that if a graph is to be included, which is very likely, it must be first printed and then scanned back into an electronic form with all the loss quality associated with such a process. Some of the electronic painting programs have the ability to import a LOTUS .PIC file directly, hopefully the PC PAINTBRUSH PLUS program will have this feature.

The second point is the ability to use the system (scanner, computer and laser printer) as a FAX machine. All the parts are there except for a

modem. A program to handle this would make buying such a system easier to justify economically and such programs are available from other sources.

Overall, the system was very commendable. it was suitably priced and the software enabled it to be a good workhorse. Those who are likely to use the system would be schools and universities to produce exceptionally high quality examination papers, businesses to produce reports or presentations for people both inside and outside the organisation and community organisations to produce the newsletters for their members, if they could find a friendly owner of such a setup.

As for desktop publishing programs such as PAGEMAKER, these are now including the driver software for the Canon IX-12 directly into their programs so buying this scanner will not be a bet on a dark horse.

PRICES: (Excluding GST)
Scanner, interface card
and IEDIT \$3750
CANOWRIT \$650
READWRITE (OCR program)
and FORADD \$1250

The review equipment was made available by Canon Data Products, Takapuna, Auckland.

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FLOPPY DISK DRIVE	Built in	Built in
SERIAL PRINTER INTERFACE	Built in	Built in
PARALLEL PRINTER INTERFACE	Built in	No
MOUSE INTERFACE	Built in	Built in
SERIAL INTERFACE TO MODEM	Built in	Built in
80 COLUMN TEXT	Built in	No
EXPANSION SLOT	One (expandable to two)	No
280 CO. PROCESSOR	Optional (built in)	No
KEYBOARD	Function keys & numeric keypad	No. Function keys & numeric keypad
VIDEO DISPLAY	PROGRAMMABLE 16 COLOR	No
TEXT COLOR	PROGRAMMABLE 16 COLOR	No
BACKGROUND COLOR	PROGRAMMABLE 16 COLOR	No
BACKGROUND COLOR	PROGRAMMABLE 16 COLOR	No
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James Adams
CompuCorp Inc.
1776 Independence Way
Boston, MA 02110

Dear Jim,

As you requested, I have included below the net sales figures for our division for the first three months of this year.

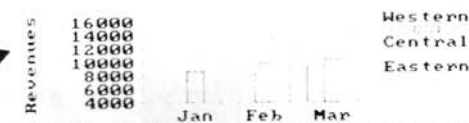
To arrive at these numbers I first extracted the sales numbers for each of my representatives from our dBASE database, then I created a consolidation spreadsheet to arrive at the totals shown.

In addition, I have graphed the results to give you a better visual representation of the results.

1st Quarter 1986

	Jan	Feb	Mar	Totals
Western	7,122	8,192	9,177	24,491
Central	8,623	9,845	10,455	28,923
Eastern	12,288	13,784	14,119	40,191

1st Quarter



I sure am glad that you suggested that we use Framework II for doing custom reports and letters like this. Because I can now spend more time with my representatives.

Sincerely,

James Adams
CompuCorp Inc.

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Nine computer-generated rate demands across Dick Daniell's desk got him thinking. Eight were wrong, with some demanding twice – and one 10 times – the proper figure. What's wrong with the system?

I regularly refer to a micro fiche with more than 100,000 names on it. The address is there to help out, but is seldom necessary. It is of course computer generated, and updated

Consider the Treasury, which has written out to around 50,000 (or is it 100,000?) people with IR 12 forms. They have instructed each recipient that it is **essential** that he write on the IR12 his Treasury (pension) number. The number, he is told, can be found on the right-hand corner of the (also enclosed) TY 1076 Address Card. So, we look at the two right hand corners of the card and find in

But these notices all go out to the aged, who were brought up when people were still human. They do not have a card index of the numbers allocated to them by their fire insurer, their life insurer, the Social Welfare, Visa, their bank, IRD, and all the other registration numbers inflicted upon us. They do not see why, if the Treasury chose to allocate them a number, the Treasury has apparently already forgotten it, and now looks to a grey head with a failing memory to help put the records back into some kind of order. Nor do they know why Treasury do not know the difference between right and left. Is it anything to



AH COME IN 85-761-35023 & MEET 73-775-64078

do with debits and credits?

Of course if they read the Deane Report they have learned that Treasury does not always know what day it is. Dr Deane found that "late on November 21 Treasury had delivered its formal response (dated November 24, because the word processor automatically switched over to that date) to the Maori Affairs memorandum of November 12." Now just who would program a machine to put the wrong date on documents? Why not program it to put the date of printing?

Or, if it's uncertain when it will be sent, why put in a date that is later said to be wrong? Is this part of a "Thank God it's Friday" approach by the Public Service? And if it automatically switches over to Monday in the middle of Friday afternoon, what happens when Monday is Anniversary Day, or Labour Day, or some other holiday? Does it go to Tuesday, and can it cope with the rules that link Easter to the full moon? And will it be argued that whoever signed the letter had not read it, because if he had, he would have corrected the date?

The dates when this or that functionary knew of, approved, disapproved or whatever of a \$600 million proposal have been debated *ad nauseam*, and it does not help to have a computer inserting its own contribution to cloud the issue, raising doubts why an important communication should have borne the wrong date. "Automatically," we are told.

When the National Provident Fund/Treasury sends out adjustment notices, the notice is prepared by a computer. As usual it is untouched by human hand and unseen by human eye. If a pension is a compound of two or three different ones, as may well happen, then the treasury sends out a separate notice for each increase, and every notice gives the wrong total. Perhaps an intelligent actuary could make sense of the agglomeration of incorrect notices, but it must leave the average superannuitant, who left school 50 years earlier, at best confused.

The fund has its computer systems under review for modernisation. Modernisation seems a funny kind of word to describe a process of sending out correct notices instead of incorrect ones.

Banks are no better. A lady asked that I pay a large sum into her bank account. She gave me the number which the bank had told her would be the number of her account. They told her I had not paid her the money, but eventually admitted the computer had allocated her a different number from the one the bank had told her they were inflicting upon her. All they needed to have done was to read the lady's name on the pay-in slip, and to treat the customer as a if she was real person, not just a wrong number. Did

they pay interest for the time the money was not in her account? What do you think?

The Post Office prints attractive postcards for people to send to their friends, and to computers who are not their friends. Because the computer does not recognise that people are human beings, the address card thoughtfully provides a space for the shifting sender to insert his subscription/policy/reference number without which the receiving computer will be unable to change its database.

Because this highly developed record-keeping machine cannot cope with the simple task of distinguishing between Jonathon Smith, born 1921, of Kaiapoi, and John Smith, born 1962, of Temuka, it therefore falls back on demanding that its customers, who provide the money to pay for its disks, should themselves keep elaborate records of the various numbers conferred upon her by numerous electronic devices that are as impersonal as the Russian secret police.

The PO card also lists the new telephone number. That is one reference which I grant needs to be numerical, because a single telephone connection may cover a multitude of humans, but the directory is of course alphabetically arranged.

The credit controller of a very large finance house was required to give information concerning hire purchase deals on vehicles it had discounted for a dealer. The dealer claimed he had not received his commission, and that the finance company had been paid twice in some cases, once by the dealer, and again by the insurance company, or by the financier re-possessing.

The credit controller told the court that he could not check whether there was anything in these claims must from being given the names of the parties. All the deals were indexed by numbers, not by the names of the motorists. Unless the dealer had kept an index of the numbers the finance company had allocated to each deal, the questions could not be answered. And even if the dealer could unlock the mystery of the names that were not indexed, the "archives" consisted of microfilm, the reproduction from which was not always readable.

Only today I was a (temporary) beneficiary of the incompetence of the system. For every loser, there could be a winner. Paid into my trading bank business account, by a professional man who chose to insert my number on the pay-in slip, a number he had obtained from a directory, was \$44,309. He had intended it to go to someone else.

If he had contented himself with just giving his bank the name of the intended recipient, he could have blamed the bank, but no, he had to go

and join in their silly pastime of playing with numbers, and he chose mine. Before I could arrange a holiday to spend this windfall the intended recipient was on the phone to me, seeking a cheque. So I have to pay the accountancy expenses of putting right the bad effects of numerology.

Would you believe it, some banks make a charge for divulging to a person paying in money, the number which the Bank has allocated to the recipient's account? Even though the teller has the inquiry terminal right there under her left hand, on the counter.

Would you not think that an alphanumerical system, using a person's name, with a numerical suffix as at present to distinguish similar accounts, or similar names, could have been devised for computerising bank ledgers?

It is a long time since the Luddites attacked the machines that heralded the industrial revolution. Then it was the fear of job losses, but today we cannot point to any diminution of jobs brought about by the computer. But the inefficiency of the operation will exact revenge. Telephone staff became so miffed about the way their pay was handled by the computer that they threatened industrial action, involving free toll calls.

People received rate demands that were wrong, because the Valuation Department was required to limit correction of errors on the computer records to one day a month. Demands could therefore issue that were known to be wrong, but it was too much trouble to amend the data to get them right before issue.

An American became friendly with a printer who encoded some cheque forms for him using magnetic ink. Supposing the cheque was a pink one drawn on the Home Run Bank, Little Rock, the magnetic ink encoded it with the numbers used by say the Touch Down Bank, Tacoma, which normally uses green cheques. There was a genuine account, but he drew cheques on the Home Run Bank which far exceeded the amount of his credit with Home Run.

The cheques were duly deposited in other towns, and sent away to be met. When the machine read the encoded number it automatically sorted it into the bundle for Touch Down, on the other side of the continent. On arrival at Touch Down, even monkeys can sort according to colour, and this pink stranger amongst the green cheque forms was rejected, and returned to the bank where it had been lodged, which in due course put it back into the system, etc. etc.

It was only when this surfeit of transcontinental travel had made one particular cheque dogeared from its numerous trips, and passages through automatic sorters, that

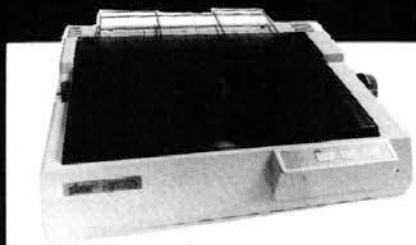
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PC192 B

someone personally inspected the cheque and discovered the encoded number was in effect a forgery, on the face of it. The conflict was there on the face of the cheque, ready to be read by any intrusive human who strayed into the collection system. Needless to say, this human intervention in the computer system did not take place until the holder of the bank account had well and truly disappeared.

Problem: who stands the loss? The Bank whose delay in recognising the rubber nature of the cheque meant it could not be collected, or the customer who handed in the cheque for collection?

Problem: if I pass a magnet over part of the MICR code at the foot of my cheque, to stop the machine dealing with my cheque, to keep my overdraft down until a real human deals with the cheque, is that forgery?

Does anyone examine MICR encoding here? Every cheque form, and every deposit slip in one of my accounts contained a printing error. The error is different with every printing. One lady found her account miraculously stayed in credit. Her husband pointed out she was writing cheques for the forthcoming family wedding, so she must surely need money.

The cheques in fact had the number of a deceased relative of hers, and had been debited to that other account, even though written after the death of the account holder.

It is a long time since the Luddites attacked the machines that heralded the industrial revolution.

The first colour advertisement of Apple showed someone balancing his cheque book. Perhaps those programs for home computers; intended for balancing current bank account, are more useful than they sound... "My computer says your computer cannot add for toffee."

If I go to my bank or my solicitor, I can ask for and get an instant update on my ledger balance. But if my neighbour goes to his solicitor he may be told that their office computer is performing some other task, and the information is not presently available. He may even be told that it's the computer that is keeping his records to itself, as operators may be more interested in the machine than the client.

This is a systems error, not an operator one. It should be obvious that if my neighbour wants to know how much money he has due to him, he does not want to be dependent on the whim of the machine, and be told to come back later. Good systems recognise this human aspect. Bad systems ignore people and accumulate bad will from the consumer.

And even if someone devises a good system, will it be used?

Have you noticed that the big advertisement for dedicated word processors never right hand justify their text – but that salesmen proclaim squaring off the ends of each line as something the purchaser would regard as desirable?

Recall that full-page advertisement in the *Dominion* and in *National Business Review* for the software-based Displaywriter, or some such name, which proclaimed that the system in its big blue box, among its many clever achievements, could check the spelling of about 50,000 ordinary business words using an electronic dictionary?

No doubt it could. But I counted two or three substantial spelling errors in the relevant text of that advertisement. Identical error in each paper. As Juvenal once said, "Quis custodiet ipsos custodes?"

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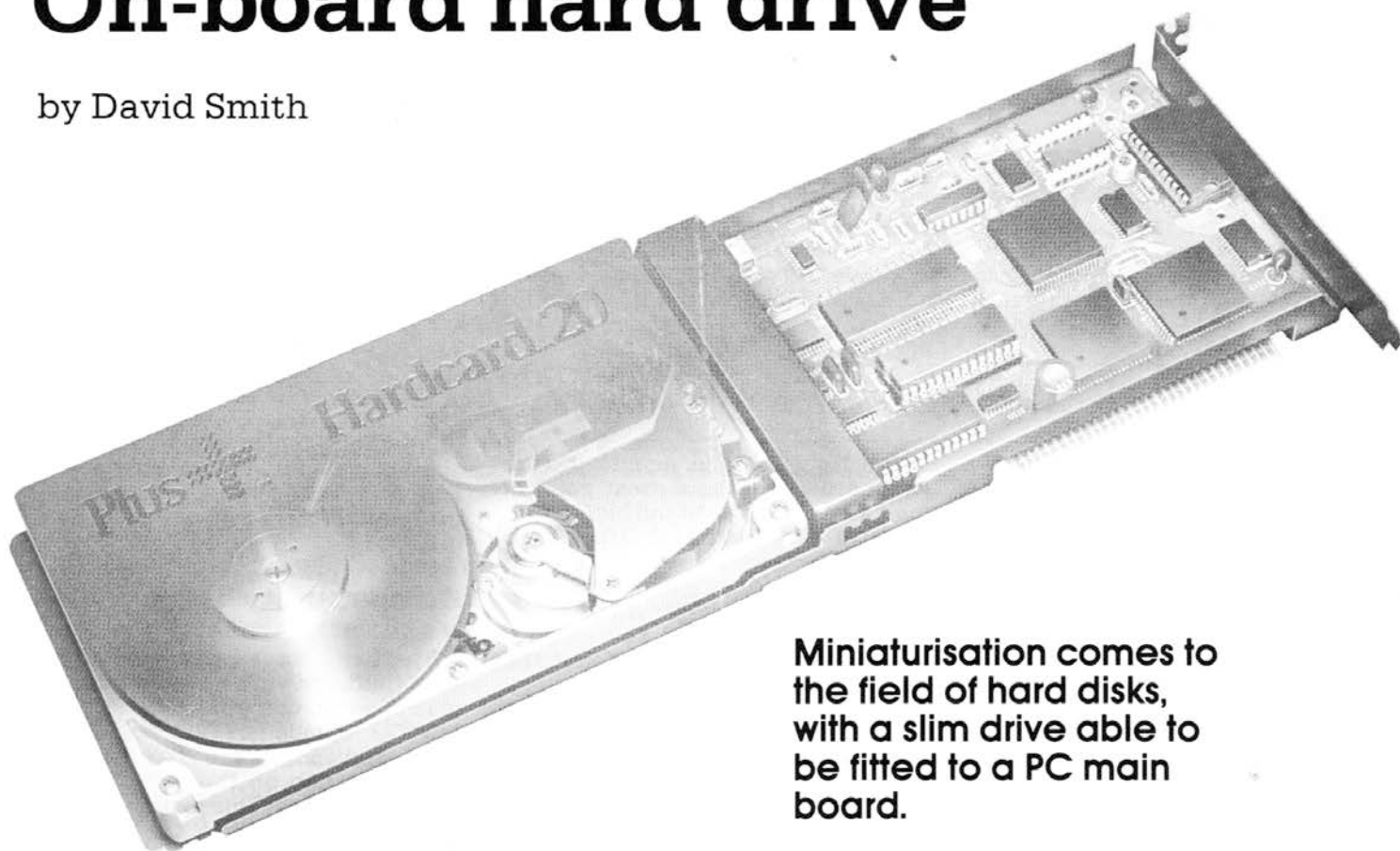


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On-board hard drive

by David Smith



Miniaturisation comes to the field of hard disks, with a slim drive able to be fitted to a PC main board.

Out in the world of users must be many professional business men and women whose computer hardware expertise is minimal, but who know what they need in the way of equipment. Realising, for example, that they need a hard disk drive in their PC to cope with the inevitable expansion of its use in the office, they still don't want to get involved with anything technical. At the same time, the thought of having to send the machine back to have a drive installed, with all the time and cost that entails, is not one which appeals either.

For such people there are add-on, plug-in devices available which enhance the flexibility of the basic computer. One such is the Plus hardcard, an ultra-slim 20Mb hard drive, complete with controller, contained on a single board ready to plug into any MS-DOS machine that accepts IBM PC-style boards.

The makers of this unit have produced an ultra-high quality product. With the Hardcard there are two very clear and concise manuals, the first covering the necessary steps to install the board and the second the installation of some of the more popular program products. Also supplied are three card guides, allowing the Plus hardcard to fit a variety of computers.

The Plus Hardcard will really appeal to those who don't understand their computer and are afraid to venture beneath the covers. Using the step-by-step instructions, installation is a breeze. There is only one jumper to check, marked 'PC-XT', which determines whether the drive is to be the first or second hard drive (i.e. in the XT position, it is assumed that one hard drive is already fitted).

Slim width

The board is only one inch thick, which is no more than a standard board, so it can be plugged into any vacant full-length expansion socket. (Some other drive cards require the space of two sockets, the speaker to be moved or other installation restrictions.)

The drive is preformatted and DOS installation is undertaken in a hands-off mode. This takes about ten minutes and requires absolutely no expertise. On the drive are all the installation routines plus some other superb utility programs.

One common criticism of drive-cards is that drive activity cannot be monitored, owing to the fact that they lack a front panel light. The Plus hardcard overcomes this in two ways: activity can be monitored by a

'+' sign in the top right hand corner of the screen, or by an audio signal from the computer's speaker. The visual prompt is normally on, but any combination of the prompts can be selected. An optional screensaver routine is also provided, which blanks out the screen after a period of inactivity, and restores the display upon pressing any key on the keyboard.

The environmental limits claimed by the manufacturer of the Plus Hardcard are greater than those claimed by most other drive manufacturers and the physical construction is to a very high standard.

On booting the Plus Hardcard a menu appears, and is modified each time a new program is copied onto the drive. F1 key brings up a Help screen, F4 allows the user to type in a string of DOS commands, F5 enables the user to modify the menu, and F7 exits to DOS. A great deal of thought

has been put into making this menu program simple yet versatile.

The software installation manual gives step-by-step instructions for copying the following onto the Plus Hardcard:

- dBase III
- Lotus 1-2-3
- PFS: File
- Wordstar
- Other software programs not copy protected.

As the software is copied, so the Hardcard Directory (i.e. the menu) is modified, and the new software can be accessed from the menu screen.

It is obviously aimed at the top end of the Personal Computer market, designed for the user who wants quality and ease of use.

As simple as the installation is, Murphy's Law dictates something may go wrong. In anticipation, the manual has a section on remedies for error messages and another chapter on technical tips. It is unlikely that these chapters would be needed.

The environmental limits claimed by the manufacturers of the Plus Hardcard are much greater than those claimed by most other drive manufacturers and the physical construction is to a very high standard. The reviewer was reluctant to test the claim that the drive can stand a shock of 10G while operating and a

staggering 100G when powered off! The heads are automatically parked on powerdown and held with an air-lock device.

The reviewed drive was unpacked as shipped from the factory and several tests were performed to check it out. Each of the 2460 tracks has a spare sector which can be used in place of a flagged defective sector, and just two of these had been used. The drive passed all tests on the IBM diagnostics, and its noise level is about the same as most PC hard drives: in a typical office it is hardly noticed, but in a quiet home environment the noise can be quite distracting.

Portability

The New Zealand agents for the Plus hardcard make a great point in their advertising as to the high portability of the device. It takes two minutes to remove or replace the card in an IBM PC and only a matter of seconds in those machines with flip-top lids. This feature could be useful for removing the Plus Hardcard from the machine for security reasons (e.g. when a staff member wants to take the computer home at weekends, or when the computer needs to be sent away for repair) and, within reason, the Plus Hardcard could be used as a portable disk ready to plug into any machine.

However, the illustration in the advertising, showing the card slung into a brief case, should not be followed. Any such device should be transported in a static-proof bag and with adequate packing. The original Plus Hardcard packaging would be

ideal, but this would not fit into a briefcase! The bus sockets on the motherboard of a computer were not designed to have boards constantly exchanged, and it is possible that these sockets could become unreliable after excessive repeated board exchanges.

Unlike some other drive cards, second drives cannot be strung from the Plus Hardcard's controller, although two Plus Hardcards can be installed in the same machine. The seek times for the drive (49ms average, 90ms maximum) are approximately half those quoted by the manufacturer of another popular drivecard and about 30 per cent faster than the majority of 20Mb disks at present on the market in New Zealand.

At 8 watts, the power consumption is very low, which can be useful in some machines where the power supply would be marginally inadequate for a conventional hard drive.

Compatibility

The manufacturers have tested the Plus Hardcard with a whole range of machines including the IBM PC, IBM PC/XT, Compaqs, AT&T, Olivetti PC24, and an upgrade kit is available for installation on the PC/AT 80286 based machines. This reviewer found no difficulty installing the board in the Oriental PC clones.

The New Zealand agents, Tech Pacific, quote the recommended retail price as \$2373 plus GST, but the 20Mb Plus Hardcard is being advertised by at least one dealer at \$1800. Even at this price, the unit is \$500 more than a quality hard disk drive and controller board, for example the NEC 20Mb. In many standard applications the Plus Hardcard does not appear to be value for money, but in certain cases the extra expense would be well worth it. Some of these might be:

- Portable computers.
- Applications where the drive is to be installed and operated by an inexperienced person.
- Applications where the drive is to be regularly exchanged between computers, or removed for security reasons.

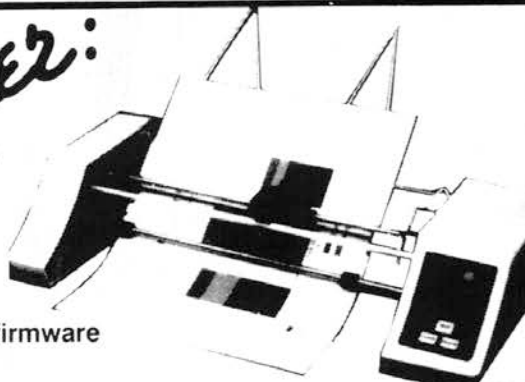
But the Plus Hardcard is obviously aimed at the top end of the Personal Computer market, designed for the user who wants quality and ease of use. Both of these factors are prominent.

Ratings: (5 highest)
Documentation 5
Performance 5
Value for money (see text)
East of use 5

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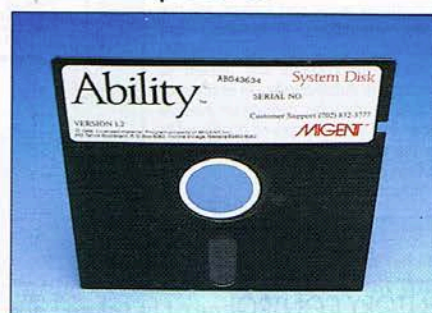
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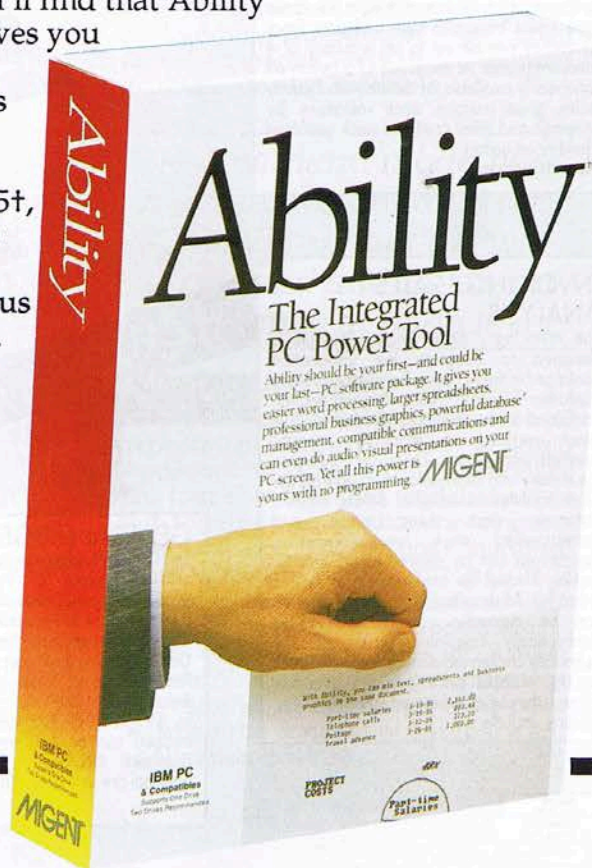
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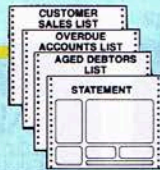
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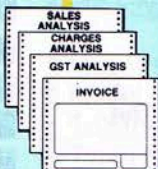
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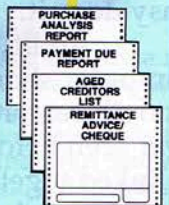
INVOICING / SALES ANALYSIS

The Invoicing / Sales Analysis module is designed to integrate the information contained in the Accounts Receivable module (customer records) with the information contained in the Inventory Control module (stock records) to efficiently produce computerised invoices. These are created on the screen, with information recalled from the other modules on customer details, account balances, stock items, prices and corresponding stock levels. Extensive descriptions can be entered to the invoice, making it ideal for tradesmen and service industries. All data input from other modules can be manually over-ridden. GST is automatically calculated based on the optionally chosen inclusive or exclusive stock pricing. Multiple price lists are available through the use of a discount schedule. Reports include:



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The General Ledger module can be regarded as the nucleus of the small business accounting system, providing up to the minute information on its financial position. Collating the data obtained from the other modules, the General Ledger produces reports that include Trading Account, Profit and Loss Account and Balance Sheet. Balances may be recorded up to \$99,999,999.99. Monthly and annual budgets can be prepared for comparison purposes. PROFAX is supplied with an optional pre-set chart of accounts. Reports include:



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Complex and relational

Just about all computer systems are incomplete until database management software (DBMS) is installed. John Lau looks at one system, developed some years ago. How does it compare with the latest trends?

Any business organisation is founded and run on information such as customer details, sales, orders, stocks etc. The storing, retrieving and manipulating of this data are made much more manageable with the help of top-flight database programs. Most people would have had the experience of using the good old traditional method of filing cabinet, index cards, folders and a secretary fluent in ABC...

However, if you are getting a computer system or already have one, and are thinking of getting a DBMS, then look closely at R:Base System V. In the mainframe area, Relational DBMS is the buzzword at the moment, as a flip through some of the computer magazines will show.

R:Base was first developed some 20 years ago for the VAX machines, yet the System V is relational. That means essentially that the database is easier to manipulate and handles the company business rules more precisely with fewer mistakes during input and delete. It also offers higher performance and lowers costs in the long run because of easier implementation, higher user productivity and more flexibility.

R:Base System V comes out of MICRORIM who first gave us R:Base 4000 which in its heyday was complex and not user-friendly. It could handle only a file (or table in relational term) at a time, but could join many related tables to give a bigger one. Menus and pop-up windows were almost unheard of and a blinking cursor where you enter your command was the norm. Then came R:Base 5000 with better user interfaces for easy access to the power of the database system. This is the PC version of the program as used by NASA in the States. Now R:Base System V is here with very powerful generator utilities, even more comprehensive menus and the ability to link several tables without joining them into a single table.

It used to be that a DBMS was either simple and easy to use, or complex and unfriendly. Tough choice for some. Now with R:Base System V, you can have the cake and eat it too.

The package is professionally presented in a plastic box containing several volumes of manuals, and another enclosed box of booklets and the 11 5¼ inch disks. The manuals

are loosely wire bound and of a very high quality print. The back page is an extra 95 mm wider so that it doubles as a book-marker. This is very thoughtful and useful because the manuals are fairly thick.

Installation

This is very straightforward and the program is not copy protected. There are 11 disks altogether, so it is not possible to run it from floppy disk, a hard disk being essential. The program itself and files will occupy a massive 4Mb of your disk space. However, if you are desperate for space, after you have gone through the tutorial you could delete about 400kb of tutorial files. Depending on what other software is installed in your PC and the size of your company's database, one should really be comfortable with a minimum of 20Mb hard disk.

The whole process takes 27 minutes on the PC or 15 minutes on the AT and you only have to type "INSTALL" and physically change each disk as and when prompted. The BAT file will automatically modify your CONFIG.SYS file (BUFFER = 16, FILES = 20). At the conclusion of the 11th disk, enter RBSYSTEM at the DOS prompt to start up the DBMS.

Documentation

It is often impossible to cater for all the likely users that you can ever imagine using any product, ranging from the novice through the average to the expert. A tough job indeed, and one wonders whether to include explanation of simple concepts to complex commands and database design. A command summary, message and code manuals are a must for quick reference.

With a complex program such as this DBMS, the documentation supplied must be of the utmost quality. I am glad to say that together with the package come a Learning Guide, User's Manual and Building Applications Command Dictionary, plus eight booklets (Install, Message & Code, Read-me, Conversion Guide, Command Summary, Table Characteristics Worksheet, Multi-use Guide and Exchange). Altogether a good thousand pages, and three training manuals are also available.

The command mode has an extensive context sensitive syntax that allows only a valid and meaningful response at each level.

The user's manual contains 10 chapters of detailed information on all aspects of R:Base. The Building Applications Command Dictionary has four chapters that explain how to put together an application system. The Learning Guide goes hand-in-hand with the R:Base tutorial. It is basically the same as in R:Base 5000 and is a very good introduction to some of the capabilities of R:Base System V. The student goes through the tutorial, at his or her own pace, learning the concept of database and application design.

Menus

R:Base System V is driven extensively by menus (vertical, horizontal, pop-up). If you use your database program frequently, the menus can get in the way, and appear to be long-winded and cumbersome. For this group of users, R:Base allows the bypassing of the menu system by entering the command ESC.

R:Base uses several screen prompts that consist of an uppercase letter followed by a greater-than sign ">". Thus the R:Base command prompt is R>, Help prompt H>.

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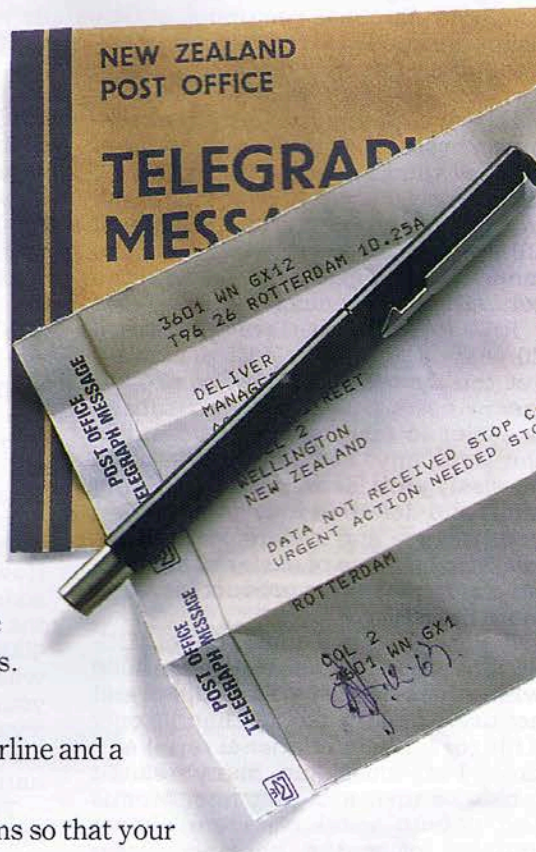
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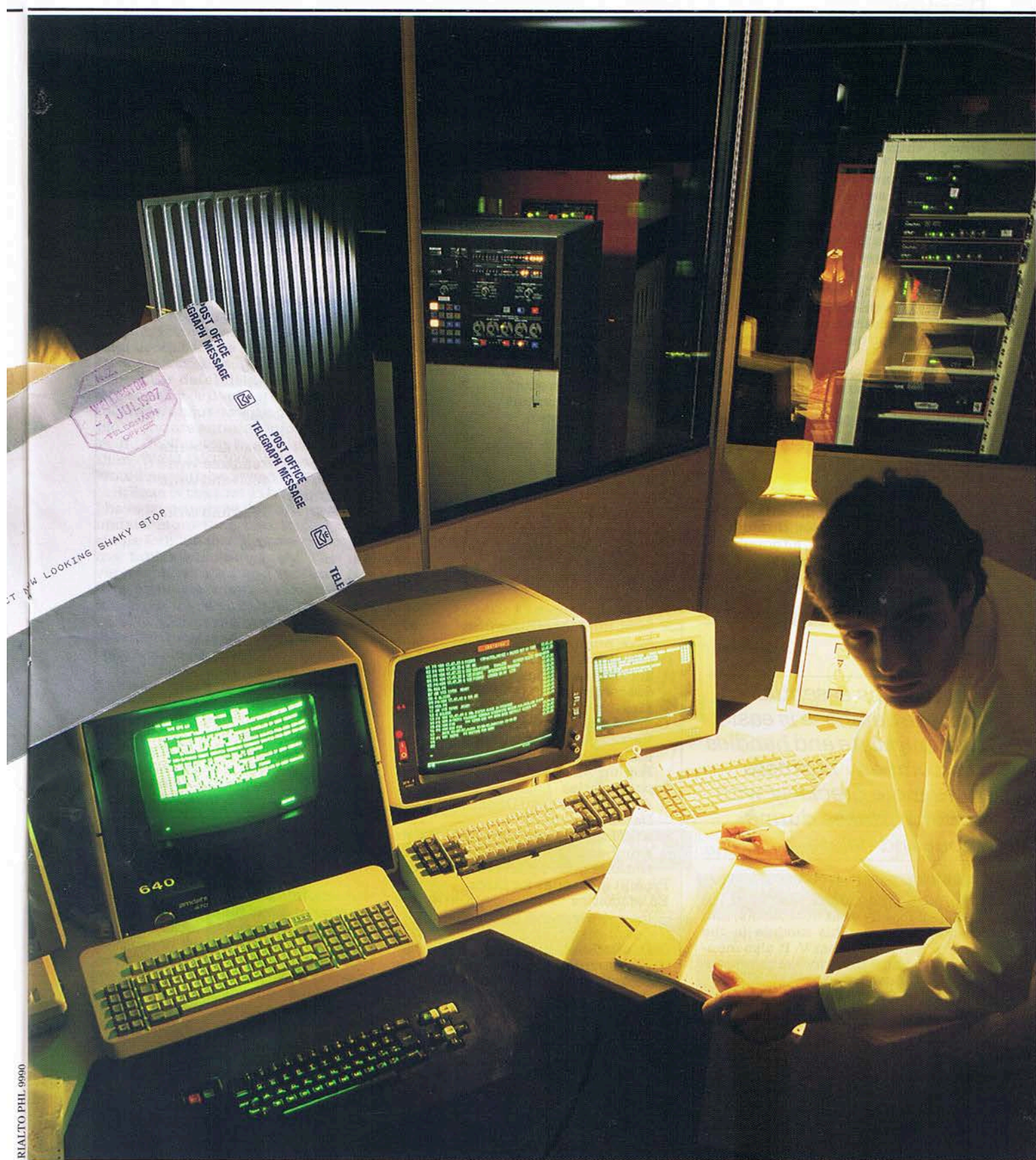
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database definition prompt D> etc. To return to the menu format, enter ESC or END at the prompt. You can also go directly to the part of R:Base that you want to work on at the DOS prompt, thus eliminating the primary menu.

The command mode has an extensive context sensitive syntax checking that allows only a valid and meaningful response at each level. This, together with the HELP facilities and error detecting functions, makes R:Base a joy to use. For example, if you make a syntax error, say entering a SELECT command, R:Base will display on the screen the correct format from which you can check and correct any error.

In addition to the help received by pressing F10, you can use F3 to display the structure of the database and Shift F6 for a menu of DOS functions.

System analysis

R:Base System V links together seven separate modules through an attractive central menu, although you could actually start up any of the programs individually. These are R:Base Command, Application, Definition, Forms, Reports, FileGateway and CodeLock.

That means essentially that the database is easier to manipulate and handles the company business rules more precisely with fewer mistakes during input and delete.

R:Base commands are used to define or modify your database(s) and their attributes. This module is the core of R:Base System V. It also manages the rules you define to govern your database, looks after security passwords, builds command files, and creates custom forms and reports.

To define your new table(s) (i.e. database), go into Definition Express and it will prompt you for the structure or layout. Your information will be tabulated into columns for each of the elements in your table, for example customer number, name, address, phone number etc. where each customer will require a separate row or record in the table. Then you index your table by telling R:Base that you want to assign the customer number with the key attribute giving you faster access to individual records.

Relational databases – Summary and Comparison of Features

	R:Base System V	dBase III Plus
Price	\$1995	\$1546
Hardware requirement		
PC or compatible DOS 2.0 or higher	yes	yes
Total number of distribution disks	11	7
Number required to run program	10	2
Program Size	4000kb	500kb
Database limits		
Max. number of fields	800	128
Max. number of records (per file)	unlimited (limited by disk space)	1 billion
Max. record size	4096 bytes	4000 bytes
Data types and sizes		
Integer, Real, Double, Text, Date	yes	yes
Time and Currency	yes	no
Computed Columns	yes	no
Logical (Boolean)	no	yes
File transfer		
PFS	read and write	read and write
dBase	read and write	read and write
Lotus 123 & Symphony	read and write (output .WKS only)	read and write
ASCII & DIF	read and write	read and write
Relational operators		
Project, Join, Append, View	yes	yes
Union, Intersect, Subtract	yes	no
Ont to Many Relationship	yes	no
Data manipulation		
Data dictionary	yes	no
Max. number of open files	80	15
Max. number of index files	400	unlimited
Compound indexes	no	yes
Sorting (ascending/descending)	yes	yes
Max. number of tables merged	2	2
Command menu format		
Vertical/horizontal bar	yes	no
Pull down	no	yes
Pop-up windows	yes	yes
Input facilities		
Automatic screen Definition	yes	yes
Database definition	yes	yes
Application building	yes	yes
Number of screens per file	unlimited	unlimited
Number of files per screen	80	10
Prompt messages for fields	yes	no
Edit facilities		
Inter-column math in database tables	yes	no
Data validation RULES without programming	yes	no
Searching on NOTE data type	yes	no
Output facilities		
Mathematical & statistics functions	yes	yes
Financial & scientific functions	yes	no
Manual report forms layout	yes	yes
Automatic report generation	yes	no
Programming facilities	yes	yes
Max. report width	255 characters	500
Miscellaneous		
User-defined function key	40	8
Context-sensitive HELP	yes	yes
Macro	yes	yes
Multi-User capabilities	yes	yes
Unlimited users per server		
at no extra DBMS software cost	yes	no
Data encryption	no	yes

The form development system program is called Forms Express. This screen painting utility can handle up to five tables within a single form. It is extremely easy to use and yet powerful (multi-row entry for any table). For the creative designer, this module provides field level colour control, free form design plus table look-ups, full expression capability, default values, and extensive field types.

Once the tables are set up you will need to use the Form Express to design the input screen form. This can be a copy of the paper type forms that you are currently using such as sales or invoice, but R:Base does provide default forms should you decide they are satisfactory. For repetitious (or similar data) fields, FORM allows you to carry or duplicate into the next record without retyping. For example, if you are entering information for your Wellington-based customers, then WELLINGTON (the city field) would need to be keyed only once.

R:Base is the first PC software that I have come across that allows you to update more than one table with a single form. In fact, it can access up to five tables simultaneously. This is a very sophisticated and versatile feature available rarely even in main-frame database software. A series of up to five forms can be logically linked together to spread out an otherwise complex single form.

The next step is Application Express which is literally a breakthrough in "programming" because you do not need to learn any language. This module will convert the assigned task into programs for you, automatically.

You build a system by assigning your options to a list prompted by R:Base (EDIT, DELTE, MODIFY etc) and giving a task a title. All you have to do is answer all the questions prompted (which database, table, element etc).

After retrieving the information you probably would like it to produce some reports. Before designing your own report you should take a look at a sample default printout. If you find it unsuitable, customise your reports with automatic sorting, exact positioning of page footings, look up table and expression capability and other functions.

If you already have data in files or are currently using other database(s), you can use the FileGateway module to convert them over to the R:Base format. This program can also transfer data files between R:Base and Lotus 1-2-3, dBase II, dBase III, pfs:FILE and most other PC programs that work with ASCII and DIF files.

The last module is CodeLock which compiles your applications (that you designed using Application Express) so that they are not easily tampered

with. You also get the added advantage that the binary file created by CodeLock should run faster.

Another notable feature is that inexperienced or novice users could perform complex database queries using the Prompt by Example which is context sensitive.

Summary

All things considered, R:Base System V is a top-of-the-line product for most small to medium businesses where a variety of information needs to be stored, manipulated and retrieved in a variety of formats.

This suite of programs has almost everything you ever wanted in a DBMS - extensive mathematical functions, versatile import and export utility, variable length text fields, double precision numeric fields, five tables form, plus very easy-to-use and yet powerful application generator.

If you have LAN: then this is even better value because multi-users' support is built in and no extra cost is involved. For a six-user set-up, dBase III plus will be twice as expensive as R:Base System V.

Highly recommended.

Review system supplied by Brimaur Computer Services, Auckland.

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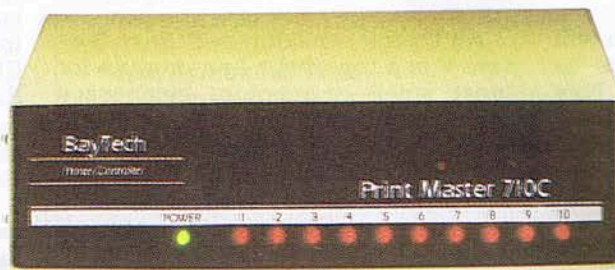
SHARE PRINTERS AND BUFFER PRINT JOBS WITH ONE VERSATILE UNIT

Print Master from BayTech is an intelligent printer controller that connects between your computers and printers. It allows you to share one printer automatically, contend for multiple printers automatically, or switch between several printers by sending a simple code, not by changing cables. Plus, Print Master's generous built-in buffer spools data until your printers can receive it.

Because Print Master is a very flexible device, you can set it up to fit your application, even if your application changes.

YOU SET UP THE IN-OUT PORTS

You configure Print Master's ports for any combination of printers and computers by answering questions from easy-to-follow menus. For example, with the ten port Print Master, nine computers can share one printer, eight computers can share two printers, seven computers can share three printers, and so on, to one computer which can share nine printers. You can also menu-select the disconnect time-out, form feeds, etc. and on serial models, the configuration of individual ports to translate for printers and computers using different configurations.



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Since Print Master can accept data faster than your printer (up to 19.2KB serial or 5,000 characters per second parallel), you can send a print job to Print Master's standard 512K buffer and then go on to another project. All users connected to Print Master can send data to this common pool buffer, and they can be doing it simultaneously, even if no printer is available. Data is stored in the buffer until it can

be sent on a first-job-in first-job-out basis to the selected printer. If you need more memory than 512K, Print Master is optionally available with one megabyte buffer.

If several users are sharing one printer, printer sharing via Print Master is completely automatic. There are no codes to send. You simply perform your normal print operation. If you are sharing several identical printers, connection is also

automatic. Again, you perform your normal print operation and are connected to the next available printer on a first-come-first-serve basis. Print Master will send data to all printers simultaneously to keep your printers running at full capacity.

If you are sharing several different printers, such as a laser-jet, a dot matrix and a plotter, and you wish to select a specific printer, you do your normal print routine and also send a printer select code (which you can define yourself) before the first characters of your data. The data is then routed to the selected printer. It's that easy.

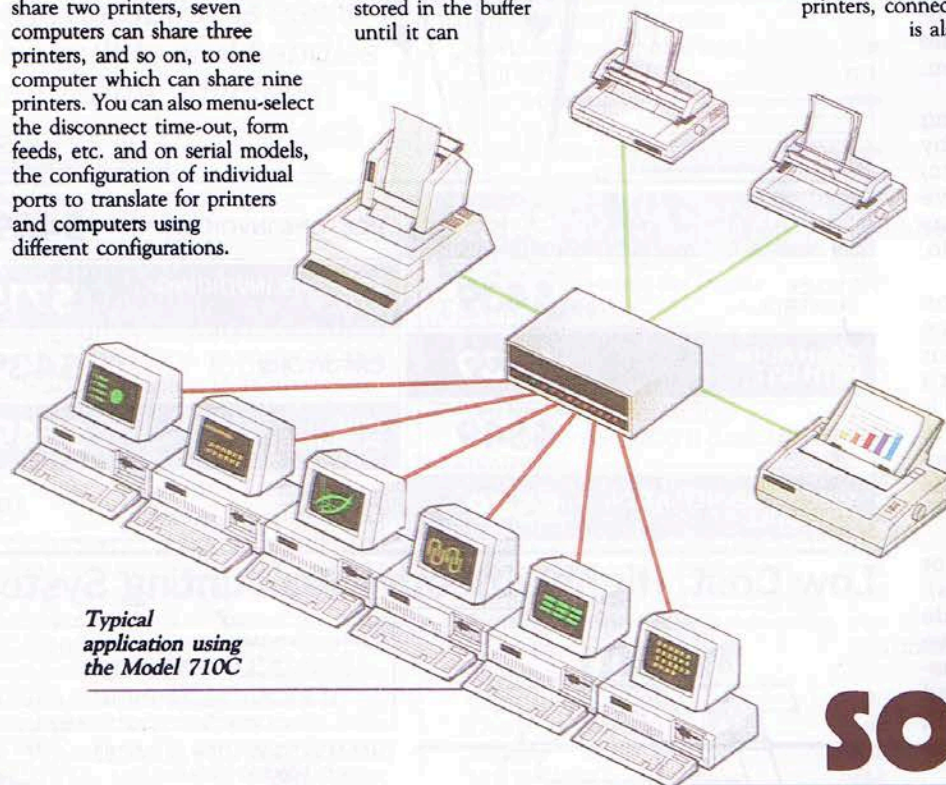
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Amiga bridges the generation gap

by Joe Colquitt

The latest Commodore offerings, from the Amiga 256 to the Amiga 2000 indicate a commitment by the company to strengthen its hold on the home/business market, bridging the division between what was once two very separate computer user environs.

The Amiga 500, the newest release in New Zealand is a refined version of the earlier released 1000. In fact, a fair amount of restyling has taken place to produce it and while it's known that Commodore in New Zealand is pitching the home market with this machine its capability and price must make it a real and worthwhile consideration for the low end business and education market as well.

The 1000 consists of a keyboard attached to the main cabinet by a coiled lead, as indeed a lot of PCs are; the 500 lives in a case not unlike the C128 having a footprint of 47cm (W) x 33 (D) x 6 (H). The casing and alphanumeric keys are light beige. Other keys are slightly darker, as is the norm these days. The keys are in three groups; alphanumeric/function, cursor/DEL/HELP, and a numeric pad. A Commodore and relief Amiga logo sit above two LEDs, power (red) and disk drive (green). These, together with CAPS LOCK LED are the only hint of colour.

The right hand back corner houses a quiet 3½ inch drive which has a storage capacity of 880K and, a data transfer rate, of between 15 and 20 kb/sec.

Peripheral sockets at the rear are two x 9-pin joystick/mouse, left/right audio, DB23 external drive, DB25 Serial, DSB25 Parallel, power in, DB23 RGB video, monochrome video. On the left side is a male edge connector, available for a motherboard application such as 8Mg expansion.

On the underside of the case is a cartridge port, for uses by the A501 memory expander which allows for the addition of 512K of RAM and a real-time battery backed-up clock. Here is one of the major differences between the new model and the 1000. You can't add further memory to this machine by adding to the motherboard and any building is done externally.

On power-up, the system asks for the Workbench 1.2 disk. At this stage, you may opt for that, or insert some proprietary program disk which runs



automatically. Workbench is your access to DOS. Within it, all the usual DOS functions can be performed. In PC terms, it's the same as using a disk with the COMMAND.COM file. Software written in the future, and in the recent past, will conform to the 1.2 version of Workbench. Previous 1.1 software should run.

Multi-tasking options

Once in Workbench, which is like a HUGE GEOS on the 64/128, a variety of options is offered. Aside from DOS operations, there are some demos to look at and on the 500 the RAM is not utilised to run the multitasking activities – it has a multitasking chip. The demos include information files, and the option to change preferences e.g. the speed of the mouse, screen colours, text width.

At this stage, and in most applications, a pointer is moved by the

operator's mouse to click on icons. By double-clicking an icon (or clicking once and selecting Open), the related directory opens, and a window will appear for it on the screen. Within the window may be sub-files. The windows form a pictorial view of root and sub-directories, and many windows can be in effect simultaneously, limited only by the available memory. Mouse control can be an inefficient approach for some work, so fortunately keys can be used instead.

Files and messages have been written with a sense of humour, albeit very dry on occasions. When searching for Notepad fonts, as an example, the legend 'searching for Fonts, are you there Fonts?' appears in the title bar. All in all, the supplied icons are wryly user-friendly and comfortable to work with.

An alternative to the pictorial method of working with files is to enter commands via the Command Line Interpreter (CLI). By selecting

this option from the system directory, commands (eg DIR, COPY) can be entered as they would be on a DOS machine. This is often more convenient than selecting file icons, particularly when more than two or three operations are performed. As with windows, more than one CLI can be in effect.

The heart of the A500 consists of one standard and four custom VLSI circuits. ROM/DOS is 256 Kb, RAM is 512KB.

The processor is a Motorola 68000 16/32 bit CPU, run at 7.2MHz, which controls the handful of other chips in the A500. Control of the other three custom chips is done through GARY, which handles bus, keyboard, some RAM and some disk logic. Extensive use of DMA control means that many functions of the A500 operate concurrently, while the CPU is occupied with other tasks. This means that animation/audio etc are not retarded because they are waiting for CPU instructions. Instead, the four custom chips take care of those features in real-time.

Fat Agnus supervises animation, and with GARY, allots the display buses and other logic signals. The chip also has 25 dedicated DMA channels, allowing multi-tasking (disk,

audio) to proceed with minimal CPU intervention. High speed 'Bit Blitter' animation using hardware frees the CPU for simultaneous tasks.

The A500 has all the excellent graphics of the A1000, controlled by a chip designated Denise. Screen resolution is 640*400 (or 320*200), a palette of 4096 colours, 60/80 column text, 8 sprites, and bobs (blitter objects). Bobs can be larger, more colourful, and less limited in definition and display, but move slower than sprites. Many screen depths are allowed for 3-dimensional animation and windowing. The 1081 monitor supplied is switchable between colour and green.

Best audio

The A500's audio voicing is easily the best of a machine at this end of the price range. The in/out chip, Paula, is in charge of sound and peripherals. Features of the audio include four voices, stereo output, nine octaves, complex waveforms, AM/FM of waveforms (and a male or female speech synthesizer not actually overseen by Paula). Sound output is very clear, with total control over tonal qualities. Selection of different

speech parameters produces a variety of quite intelligible personalities.

In addition to the array of features of the A500, you can add your own peripherals. Already mentioned is the 8M expansion. Daisy-chained 3 1/2 or 5 1/4 inch disk drives can be attached. The 'Sidecar' IBM emulator is available, and there's also a strong possibility of a C64 emulator in the near future. Musicians will be able to take advantage of the A500's low price and sound/graphics capabilities with MIDI (musical instrument digital interface) add-ons, and the A500 is compatible with video digitisers.

This particular Amiga is priced at the lower end of the business computer market, yet will out-perform many machines several times its cost. At \$1495, it's not beyond the reach of the small business or games enthusiast, but you'd have to be pretty enthusiastic to get one just for games. Undoubtedly, if put to work properly, the owner of an Amiga 500 would have no trouble making it pay for itself.

Amiga 500 \$1495
1081 monitor \$995
A501 RAM expander about \$300
Extra disk drive \$795
IBM emulator (Sidecar) \$???

... and a word about the software

In contrast, peripheral devices were slow to emerge with some only now becoming available in New Zealand. Below is a summary of Amiga software and peripherals currently available in the Pacific; a summary of games available for the Amiga will appear in a future edition. But first a couple of words of warning before making your choices.

Increasingly, software produced for a specific machine is released in versions for new hardware. Some Amiga software currently available, is in this category and it is worth remembering that while cloned software offers you what you may have been used to in other hardware it does not necessarily take advantage of the features of a new machine.

There are features on the Amiga that should be utilised by all the software available, such as using the mouse and menus, high resolution colour options, speech, sound effects and multi-tasking. These are features which I consider separate the Amiga

from its peers.

VIP Professional, a Lotus look-alike, is, in my opinion, a classic example of a cloned program which does not take advantage of the hardware features. Ported over to the Amiga with a tremendous memory overhead, the program requires at least one megabyte of memory for a medium sized spreadsheet. It makes no use of the mouse or pull-down menus, is not multi-tasking, nor does it make any use of the graphics' capability.

In contrast, Analyze II is another Lotus-style program with many identical Lotus-type functions but which makes full use of the Amiga's graphics, mouse and multi-tasking facilities, using less memory overhead and still just as fast. It will also read Lotus or VIP Professional files.

Many readers are aware of the frustration felt when reading about the range of software and hardware available overseas, much of which does not seem to find its way here to New Zealand where we are at the

The Amiga computer has now been on the market for some time and while the software for it started appearing quickly, soon after the initial release of the machine, the pace appears to be slowing.

by Colin Marshall BA

bottom of the international queue.

This may be our good fortune: software and bugs go hand in hand. No-one wants to be the guinea pig for a company on the other side of the world and the lead time of at least a couple of months that it takes for software to reach New Zealand means that generally speaking we are receiving American and European software that works. It should be remembered also, that software houses and peripheral manufacturers commit to marketing their products in magazines and are forced to comply with deadlines which are frequently a month or more before publication. The products they are advertising were intended for release by the publishing date but bugs or manufacturing problems may mean they cannot deliver. As a consequence, some of the products that are advertised may not be available in the country of origin yet or even have come to market, although you have been reading about them here.

Amiga Product Available in South Pacific

WORD PROCESSORS
Desktop Publishing

	A	b	c	d	e	f	g	h	i	j	k	l	m
Textcraft	y	y	y	y	y		p						b
Talker	y	y	y	y	p	y		y	y		y	y	2
Scribble! II	y	y	y	y	y	y	p				y	y	2
Publisher 1000	p	y	y	y	y	y	p				y	y	2
PageSetter	p	y	y	y	y	y	p				y	y	2

DATABASES

Superbase Amiga	y	y	y	y	y	n	y				y		b
Datamat Amiga	y	y	y	y	y	y	y			y	y	p	2
Aquisition	p	y	y	y	y	y	y	y	y		y	y	2
Mi Amiga File II	y	y	y	y	y	n	p						b

SPREADSHEETS

VIP Professional	p	p	y							y	y		1
Analyze II	y	y	y	y	y	y	y				y	y	2
Lattice Unicalc	y	y	y	y	y	y				y	y	y	2

GRAPHICS RELATED

Deluxe Video Const. Set	n	y	y	y	y	y	y	y	y		y		1
Deluxe Video Const. Set II	n	y	y	y	y	y	y	y	y		y	y	2
Print Master	y	y	y	y			p			y			2
Deluxe Print	y	y	y	y	y	y	p				y	y	2
Deluxe Paint	p	y	y	y	y	y	y				y	y	2
Aegis Impact	p	y	y	y	y	y	y				y	p	2
Art Pac I	y	y	y	y	y	y						y	b

ACCOUNTING

Businessware	y	y	y							y		y	2
Major Accounting	y	y	y	y	y	y				y		y	2
Financial Cookbook	y	y	y	y	y	y						y	2

MUSIC

Instant Music	y	y	y	y	y	y			y		y		b
Music Studio	y	y	y	y	y	y			y		y		b
Aegis Sonics	y	y	y	y	y	y			y		y	y	2
Deluxe Music													
Construction Set	y	y	y	y	y	y			y		y	y	2

UTILITIES

Videotex Amiga	y	y	y	y	y	y	y				y	y	2
Grabitt	y	y	y	y	y	y	y				y	y	b
Zuma Fonts (I-III)	y	y	y	y	y	y					y	y	b

CAD/CAM

Aegis Draw	p	p	y	y	y	y					y	y	2
Aegis Draw Plus	p	p	y	y	y	y					y	y	2

RELATED NOTES

Options...

- a - Amiga 500
- b - Amiga 1000
- c - Amiga 2000
- d - mouse
- e - pull-down Menu
- f - Multitasking
- g - High Res graphics
- h - Uses speech
- i - Uses audio
- j - Ported across
- k - uses extra avail memory
- l - Recommended in this group
- m - Kickstart / Workbench version reqd.
- 1 = Version 1.1
- 2 = Version 1.2
- b = Both version will work

Note: All categories have one of the following three responses:-

- y - Yes
- n - No
- p - Partially true - usually requires more memory for full operation

Peripheral devices known to be available and to work!

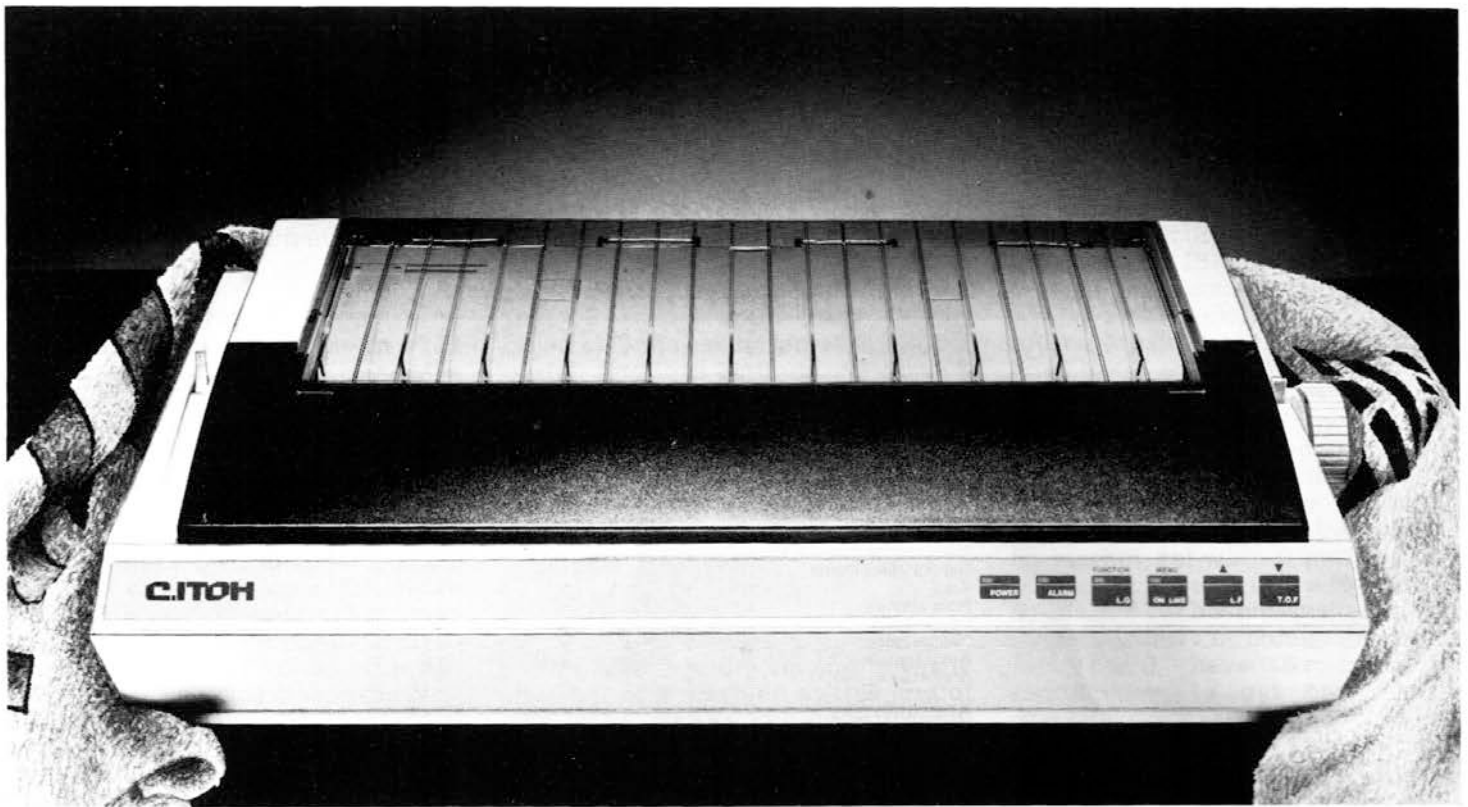
Basically speaking, peripheral devices for Amigas are brought into the country related to specific requirements. This is usually done via a local dealer. The products here are items that I have researched or have used in New Zealand.

Alegra Board -	512 Megs expandable to 2 Megs (No through board.)	\$1395.00
PAL Genlock -	RGBA Broadcast quality Composite video - In-house quality	\$1950.00
Sidecar -	IBM compatibility for Amiga 1 x 5.25 floppy, room for hardcard, memory expansion (IBM side only)	\$1995.00
PAL Junior -	1 Meg RAM (exp to 9 Megs) Clock/Calendar, 20 Meg Hard Disk (Price determined by configuration.)	\$4995.00 (approx.)
TIC -	Joystick port clock	\$139.00
1010 Disk Drive	Second and Amiga disk drive	\$795.00
Digiview	Picture Digitizer (requires Video Camera etc) will digitize in black and white to high resolution colour.	\$895.00

Colin Marshall was formerly a teacher and today works for a specialist Commodore retailer, where he is involved in the writing of software. He has been writing for Bits & Bytes for about two years and has specialised in the Commodore field.

Touch Screen - Full touch screen capability for the Amiga. A new product that will be marketed by Commodore in New Zealand. It is currently in use in Australian airports

and is about to hit New Zealand in a big way. This product is sold as a combined hardware/software configuration.



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Software piracy...

the complaint

Dear Sir,

In recent months there have been published in *Bits & Bytes* several news items telling of the success of software publishers in combating piracy. This is all very well, but I would like to speak on behalf of the small business and home users who often have to make the following choice when choosing software:

- use Public Domain software and put up with poor support and reduced performance; or
- use pirated copies of the big name software with no support and the risk of prosecution.

This "Hobson's choice" is brought about by the high prices being asked in New Zealand for software. While some software publishers seem to want their weight in gold for the privilege of using their product (you don't even own your copy), others have taken the alternative approach of charging a fair price for their product. I am glad to see that some of the more successful New Zealand publishers fall into the latter category. Those who don't, claim that their products are superior, that they provide a better backup to their users, and that it all costs money.

I dispute those claims. The writeups in this magazine and others have shown that the low priced software often performs as well as, if not better than, that with a four-figure price tag. The backup claimed for the high-priced software is often

Product	USA Price		NZ Price		% cost more in NZ (av.)
	Min	Max	Min	Max	
D Base III+	\$864	\$908	\$1095	\$1440	43
PFS File	\$178	\$322	\$450		80
MS Word 3	\$553	\$620	\$802	\$815	38
Lotus 123		\$709	\$845	\$897	23
Pro Design II Turbo		\$389	\$695	\$795	92
Lightng Turbo	\$131	\$144	\$225	\$254	74
Pascal 3	\$ 93	\$131	\$169	\$239	82
Turbo Prolog	\$131	\$153	\$225	\$255	69
Quick Basic	\$122	\$144	\$267	\$275	104
MS Dos 3.2 & GW Basic		\$153	\$255		67

poor or nonexistent, and you have to pay extra for it. Another ploy is to charge up to 50 per cent of the original purchase price for updates that do little more than correct the more obvious bugs of the previous releases.

This of course is only half the story. The other half is the profits being made by those who do little except push the price of software up: the wholesalers and retailers of New Zealand! What follows are the results of a price comparison between the USA and here (converted to NZ dollars at \$NZ1.00=\$US0.52 plus 5 per cent duty and 10 per cent GST). The prices used are those published in various computer related magazines dated October-December 1986. This I hope will reveal the real pirates in New Zealand.

As you can see, somebody in New

Zealand is making huge profits at the expense of the smaller New Zealand users, the cheaper products having the largest price increases over those in the USA. It is this that I call software piracy, highway robbery!!! I therefore urge New Zealanders to vote with their feet by buying overseas or by buying New Zealand-written software from the publisher only. I also call for the New Zealand resellers to drop their prices to what is fair.

The Bear,
Rotorua

(Editor's note: It is not our normal practice to print letters over noms-de-plume, but in this instance the writer wishes to remain anonymous for obvious reasons. Name and full address were supplied.)

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MD1200 V22, autoanswer	\$814
Modem cables	\$41

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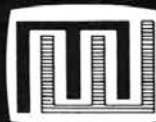
Carbon Copy Plus	\$370
MULTICOM for videotex, starnet, etc	\$295
MULTICOM PLUS adds EGA, autoanswer	\$585
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INNOVA RAM 256k (pc, xt, at)	\$444
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and the replies

Dear Sir,

I am glad to have the opportunity in the columns of *Bits & Bytes* to answer the letter to the editor from "The Bear" (pity he doesn't give his name—something like Teddy or Grouchy would make this correspondence more personal).

Unfortunately "The Bear" has got some of his facts wrong and that doesn't help his case—or mine. Let us agree to his formula of converting \$US prices to \$NZ prices, even though the exchange rate has since moved in our favour. But what about freight? Surely "The Bear" doesn't think that software packages simply arrive on one's doorstep? The average cost of cartage, airfreight, customs clearance, local cartage, insurance and documentation amounts to 12 per cent of the value of the goods (more on low value items—less on high value). To make comparisons this very real cost must be added.

Without going into the validity of every price sample cited by "The Bear", let us examine the pricing of Borland products and dBASE III Plus. The Bear quotes a minimum and maximum price for these items. There

is **NO** such thing. There is a recommended retail price set by the manufacturer. Dealers can set their own selling prices, either above or below the recommended retail price. If a dealer wishes to sell an item at cost or even below cost, as a loss leader, he is perfectly entitled to do so. This principle applies equally in the USA and New Zealand.

What then is a comparative price? For the lack of a better definition I take the price advertised by a software manufacturer for his product at which he will sell to an end user in one off quantity, without any special or introductory discount as the Recommended Retail Price. I checked several issues of *Byte* magazine and found some Borland

International advertisements. I also found a handout from Ashton-Tate quoting the recommended retail price for dBASE III Plus. I then converted these prices to \$NZ at \$NZ1=\$US0.52, added 12 per cent for freight etc, 5 per cent for duty and 10 per cent for GST and got the table below:

Reading the table I find the price conversion between the RRP in the US to NZ to be very close, bearing in mind the rapid change in the value of the NZ dollar and the difference in the weight of the products.

Now that we have put the facts right, we come to the interesting part where "The Bear" has shot himself in the foot. He states that he has two choices:

- use Public Domain software and put up with poor support and reduced performance; or
- use pirated copies of big name software with no support and risk of prosecution.

Product	RRP \$US	Converted to \$NZ	As quoted by "The Bear"
Turbo Lightning	99.95	248.67	254.00
Turbo Pascal V.3	99.95	248.67	239.00
Turbo Prolog	99.95	248.67	255.00
dBASE III Plus	695.00	1729.09	1695.00



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These are **NOT** choices! I would love a Rolls-Royce motor car. So I go along to the motorshow – and drool – then drive home in my trusted family sedan. I do not steal (yes, steal) a Rolls nor do I berate the character and quality of the sales organisation. By contrast "The Bear" appears to believe that he has a God-given right to demand expensive software for nothing (pirated copies) just because he owns a computer. He doesn't mind buying the hardware but, because he can't see the software, he wants it for nothing, like a spoilt child. He is not happy with the "poor support and reduced performance" of public domain software but does not stop to think that the very attributes he finds lacking are available in "big name" software – at a price.

He also states that "low priced software often performs as well, if not better than, that with a four-figure price tag". If that is so – what is all the fuss about? Surely the name of the game is to buy software on merit and not on price? Mr Bear, you are crying crocodile tears. If you do follow your "option" of pirating software, nay stealing software, and are caught and finish in jail, don't expect a visit from me as you don't have my sympathy.

Yes, let's admit it, NZ importers, distributors and dealers, all make an honest profit out of selling software. In fact, in many cases it is their liveli-

hood. The difference between their buy price and their selling price is what pays their wages, provides the support "The Bear" demands and ridicules and covers the cost of advertising in this magazine so that users like "The Bear" can buy the magazine at a fraction of what it would cost if produced without advertising revenue. In the process "The Bear" may even learn about a new product or two which, distributed in paperback fashion, will bring him the benefit of competent, professional, fully supported software at a give-away price.

E.M. Zimmermann, ACA MNZEI

*Managing Director,
Computer Store,
Auckland*

Dear Sir,

Rotorua's Bear has a legitimate complaint – it does seem crazy to us that the price of a mass-produced instruction manual and diskette in a fancy box should rival the cost of the hardware that it's run on...

Whilst we do not condone the unauthorised copying of commercial software, we do feel that present vendors of unjustifiably high-priced software are creating just the climate for this to become common-place.

As a software vendor ourselves we have concentrated on programs that

represent true value with prices that are relative to the purchasing power of the end user. Examples are a fully featured spreadsheet for the C64 at \$55.95, a powerful database for the Amiga series at \$349.00, and a comprehensive word-processor for the PC range at \$375.00.

We would make the point that many computer users buy software that is far more powerful (and certainly far more costly) than they need. It has now become totally acceptable to purchase hardware 'clones' (which are often superior to the original!); it's time that it became equally acceptable to buy and use software clones, most of which are high quality, reputable products.

The other side of the argument is that some premium IS justified between US and NZ price comparisons because of importation and support costs and also because our volumes typically are too small to demand the supplier prices that US mail-order houses enjoy.

A final suggestion to would-be buyers – look to buy a software solution to meet your needs, and don't just buy a package because the name is well-known.

Dick Anderson

*Managing Director,
Commodore Computer (NZ) Ltd,
Auckland*



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TA3305

To steal – or be supported

Dear Sir,

Thank you for the opportunity to respond to Bear of Rotorua. His letter brings up a number of issues which I will address separately.

a) To steal or not.

Illegally copying software rather than purchasing legal copies (from any source) is not glamorous piracy but straight-out theft of intellectual property!

If Bear is considering the purchase of a pair of Gucci shoes, a Rolls-Royce or a piece of software, he has the option not to buy it if he either cannot afford it or thinks it is overpriced. He does NOT have the option to break into a car showroom or shoe shop and steal the product, any more than he has the option to steal software.

Surely we must question Bear's morals if he is prepared to undertake a course of action and in his own words risk prosecution.

b) New Zealand pricing

Bear's concern at the pricing disparities between New Zealand and the US is understandable. What he doesn't know however is that major US software publishers generally have an international version of key products. These products not only address date and measurement differences (both program and documentation) but also things such as European symbols (accents etc.) and other esoteric issues. This certainly is the case with Microsoft, Aldus PageMaker and Adobe. These principals, in turn, have set a higher price for this international version. The US mailorder houses buy and sell the US product in huge quantities, provide no support, hence they only require "3 Guys" type margins.

It is highly likely that Bear and other critics have taken advantage of the marketing expenses incurred by New Zealand distributors and dealers such as advertising, free seminars, product demonstrations, telephone advice and the like. It appears rather

one-sided to use these facilities then buy overseas. On this side of the fence we have to pay our staff, pay our bills and make a profit.

A typical case is where an end-user experienced massive problems using a US version of Microsoft Word by attempting to use it with the international version of Hewlett Packard's down-loadable fonts. I would add that this particular case cost the technical staff of both the dealer and Brimaur many hours until the client gave the clue.

We would recommend that a price comparison be against international pricing to prove the point.

c) Local support.

I am unaware of the company that Bear has had problems with but,

i) We have not, do not and have no intention to charge end-users for hot-line support during the life of the product with that user, providing always the product was imported and distributed by Brimaur.

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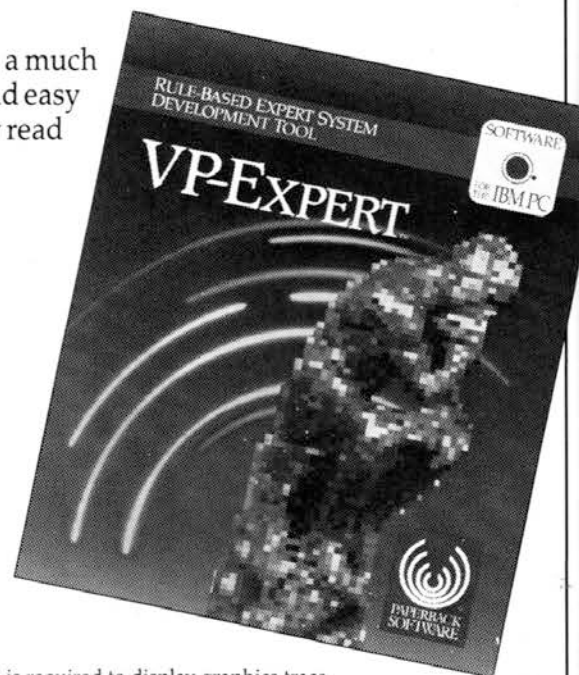
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ii) His assertions of upgrade costs being up to 50 per cent of the original package cost for minor enhancements/bug fixes appear extravagant. Our charge for this type of service varies between free and tens of dollars depending on the magnitude of the upgrade—and we pay the return courier charge!

Another example of our charges is the upgrade of the Macintosh PageMaker from version 1.2 (RRP \$1350) to version 2.0 which we are just about to commence. This, being a totally new product, is a completely fresh set of disks and manuals and is available to New Zealand registered users only for \$175—such cost covering the production, distribution, and other logistic costs. Even your correspondent must agree that's a good deal.

I am sure there are cowboys in this business as in any other, but to tar all software companies with the same brush is both unwise and misleading for other computer users.

Brian Eardley-Wilmot
Managing Director
Brimau Computer Services

Ladies and gentlemen, in this corner we have the user who is reluctant to pay more for a manual and set of floppies than the original tangible piece of hardware is worth. In the other corner, ready to strike, are those who depend on profits from software sales to make an honest living. We invited industry comment on a letter a reader, who not surprisingly wishes to remain anonymous, wrote on this vexed subject.

(Continued on p.61)

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The two new PageMakers

It is not often that an innovative program also becomes the standard of its type. Visicalc established the spreadsheet as a tool, but Lotus 1-2-3 became both the standard by which others were judged and the best-seller. Wordstar set micro-based word processing off, but programs like Word 3 and Manuscript keep improving the standard.

It is therefore significant to note that the program which established desktop publishing has not only become the standard with which other DTP programs are compared, but is also the best seller. IBM's recent adoption of PageMaker for IBM's desktop publishing package means PageMaker may well be the best seller for some time. Previously only available for the Apple Macintosh, PageMaker has now been out in PC/MS-DOS format for several months and an improved Macintosh version should have been released prior to this review going to print.

This review looks at PageMaker for the PC (version 1.0) and the new Macintosh PageMaker (version 2.0). Comparisons are made specifically with the earlier Mac PageMaker (1.2) and generally with other DTP programs.

Incidentally, the term 'Desktop Publishing' was invented by Aldus, the creators of PageMaker, nearly three years ago. Although some may dispute the absolute correctness of the term, since publishing really involves the whole process from composition to binding to distribution,

the term is definitely here to stay. It has become part of the common parlance.

In defence of the term, it is now feasible (the practicality can be debated) to compose any type of printed matter using one of the latest DTP programs as one would use a dedicated electronic typesetting workstation. Output may be achieved on an attached laser printer and then distributed (published). With higher quality output devices such as the Linotronic 300, the differences in quality would more likely be due to operator skill than inherent limitations in the DTP process, and these differences are likely to be noticed only by a professional in the printing trade. Arguing the correctness of the term 'desktop publishing' is now about as fruitful as debating whether micros are serious computers.

The original PageMaker (Mac version 1.2) introduced a new breed of software to the micro world. It wasn't the first, but it was the best at the time. It allowed the user to combine text, bit-mapped graphics and object-orientated graphics into pages without having to learn cryptic codes and

commands. Typesetting programs can be operated on microcomputers and have been for some time, and some are even called DTP programs, but they can be easily distinguished by the instructions that must be entered along with the text to indicate location or to turn off or on different features such as font type and size and so on.

The pouring-in of text in this fashion always seems to have a touch of magic in it, but its very simplicity in execution makes o its power all the more useful.

PageMaker was the most successful at merely allowing the user to place on the pages where things were to go. All this is done graphically in the style known as WYSIWYG (What You See Is What You Get) – a now overworked and oversold expression. Since laser printers have much higher resolution than any screen, no true WYSIWYG display yet exists, so in my book WYSIWYG

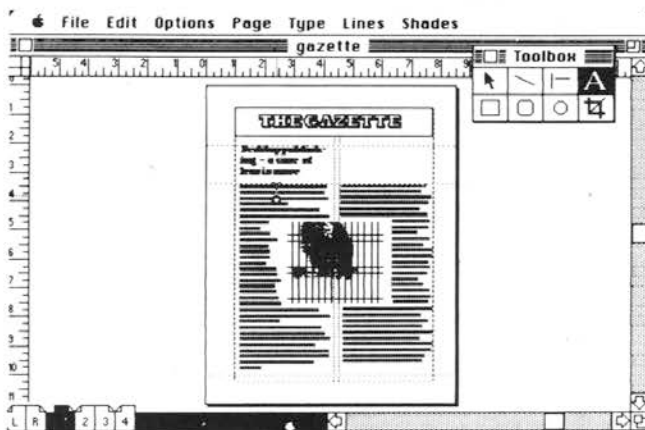


Figure 1. PageMaker screen



Figure 2. flowing text

Aldus has held the top DTP position for some time with its package for the Macintosh, and has released both the PC/MS-DOS and improved Mac versions. Is it really improved, and how does the PC model compare with it? Dennis Lally, information officer at Mobil Oil's Information Support Centre in Wellington, has a look at both systems.

This is an example of automatic hyphenation as composed in a document with somewhat longer words to demonstrate the principle of automatic hyphenation.

Two identical selections have been juxtaposed in parallel columns of narrow width in order to provide the fairest comparison.

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Two identical selections have been juxtaposed in parallel columns of narrow width in order to provide the fairest comparison.

Figure 3: hyphenation

means manipulating the contents of a publication on screen as you would manually paste it up on paper. In other words, a WYSIWYG desktop publishing program has the user moving the contents of the page about as if they were physical objects. PageMaker is all WYSIWYG. Figure 1 shows a typical PageMaker screen, which represents a paste-up table with the publication in the middle and extra work space at the sides for temporarily laying bits and pieces.

As PageMaker is the best known desktop publishing program around, I will give only a minimal description of how it operates so that more space may be devoted to the specific features and improvements of the new versions.

When creating a new PageMaker file you first select, from a page settings window, the size of paper you wish to print on and its margins. Allowance is made for double-sided pages, so instead of left or right margins you specify the measurement of the inside and outside margins. This way you can allow for the extra space needed by the binding. At the same time you indicate the number of pages and what the number of the

first page will be.

The next step is to set columns and guide lines. The command Column Guides is selected from the Options menu. A window appears which allows the number of columns for the page to be entered and the space between the columns designated. Columns can be changed later in case you want, say, two columns at the top of the page and three columns in the bottom half. If the publication is going to have the same format throughout, it is convenient to set this up on the right and left master pages. This sets a default for each respective page which can still be overridden by the column guides command.

With the mouse you can bring down or across horizontal or vertical guide lines from the rulers; these guide lines are displayed like the column guides as non-printing dotted lines. If the option 'snap to guides' is selected, these guide lines will act like magnets to snap text and pictures to them. This makes lining things up very easy even when viewing the whole page as a reduced image. It is typical of the features of a successful desktop publishing program which although imitating the obvious physical environment of the paste-up, removes the requisite skills at precise placement that page setters had to have.

In figure 1 you would have noticed a window labelled Toolbox. Positioning the cursor in one of the boxes and then clicking the mouse button selects the respective tool. The geometric shapes, when selected, allow boxes, rectangles, curved cornered rectangles, circles, ellipses and various straight lines to be drawn. Other boxes select text features and

AWAY
AWAY
AWAY

figure 4:
Manual kerning

Note how the spacing between the letters is reduced so that the letters overlap. This is the principle of kerning.

Figure 4: kerning

picture cropping. Using these tools and the mouse (PC users note that you cannot use PageMaker without a mouse) you can draw lines and boxes directly on your pages and add text in various fonts and sizes.

The Shades menu gives patterns and degrees of grey shading to fill in boxes. The Lines menu provides a variety of line thicknesses from hair-line .25 point width (a point = 1/72nd of an inch) to 12 points and a choice of line styles including various thick and thin combinations. The Lines facility applies to the boxes you draw. Thus you can draw a box using a thick and thin double line to create a rectangular frame. You can later select that box and change its shape, shading and/or lines at any time just by pointing the mouse cursor at it, clicking the button and selecting whatever combination of features is desired. To this extent PageMaker has many features of drawing or CAD type software. The Text tool allows text to be entered anywhere in whatever font, size or style is available. PageMaker can be used as a word processor at a pinch, but it is not designed for large amounts of manually entered text.

The real power of PageMaker is in the Place command which lies under the file menu. When Place is selected, a window appears which allows you to choose most text and many different graphic files from any disk or subdirectory. Choosing a file changes the pointer cursor to an icon with a right angled corner attached. The icon varies in design depending on whether the file is from a word processor, a painting or scanning program, or a drawing program. You simply move the mouse to place the right angled bit of the icon in the top left corner of where you want the top left corner of whatever it is to start. Clicking the mouse button causes the text to flow down the column or the picture to appear.

Should the text be too long for the column a plus symbol appears in a tab at the bottom of what looks like a Holland blind. In fact it works just like a Holland blind (see fig.2). With the mouse you can move it up or down to show more or less text. Clicking on the plus sign generates that icon cursor again. Reposition the icon as before at the top of the next column or on another page and the text will continue. It is possible thus to thread a text file through various pages and locations in a publication. Any changes later to the text, say the deletion of a paragraph on the first page, will cause all the threaded text to adjust up wherever it is located in the document.

The pouring-in of text in this fashion always seems to have a touch of magic in it, but its very simplicity in execution makes its power all the more useful. Without keeping track of

where file such-and-such begins or ends, the user simply feeds in text from any number of sources in the places desired. Nothing is cast in concrete, and placements can be relocated until the desired appearance is achieved. The text tool from the toolbox can be used to edit any of this text and to change the font, size and style of any text.

The graphics can be resized with the mouse or trimmed using the cropping tool. Text can be made to flow around graphics by altering column widths.

The improvements

The above description of how PageMaker is used applies to both the old and new versions of PageMaker. To this extent the new versions, despite their considerable enhancements, are just like the originals to use.

This combination of power and ease of use is what won desktop publishers over to PageMaker. In spite of this, PageMaker was criticised for lacking certain features which were considered essential for presentable publications. It was also known for its slowness in some operations and the occasional bug. The new PageMakers have come a long way to answering almost every typesetting criticism. The desire for more speed appears, however, to be dependent on hardware improvements.

The new features are common to both PC and new Mac versions. These include automatic hyphenation based on a 100,000 word dictionary with a supplementary dictionary for user-added words. Figure 3 shows an exaggerated example of the benefit of auto-hyphenation to reduce the raggedness of left justified text and the gaping spaces of both justified text.

Kerning is supported in both automatic and manual modes. Automatic kerning employs the kerning pairs created by the authors of the fonts used. Manual kerning allows user control in fine measurements (24ths of an em space) for moving letters closer together or further apart. This feature is especially useful for headlines. Figure 4 shows the results of manual kerning.

Another awaited improvement is spacing control. The Spacing command produces a window (see figure 5) which allows considerable control over word spacing, letter spacing and the amount of room in left justified text for auto-hyphenation to become operative.

The original PageMaker had a serious limitation in allowing up to only 16 pages in each document. Although it was possible to produce a publication of up to 999 pages, it would

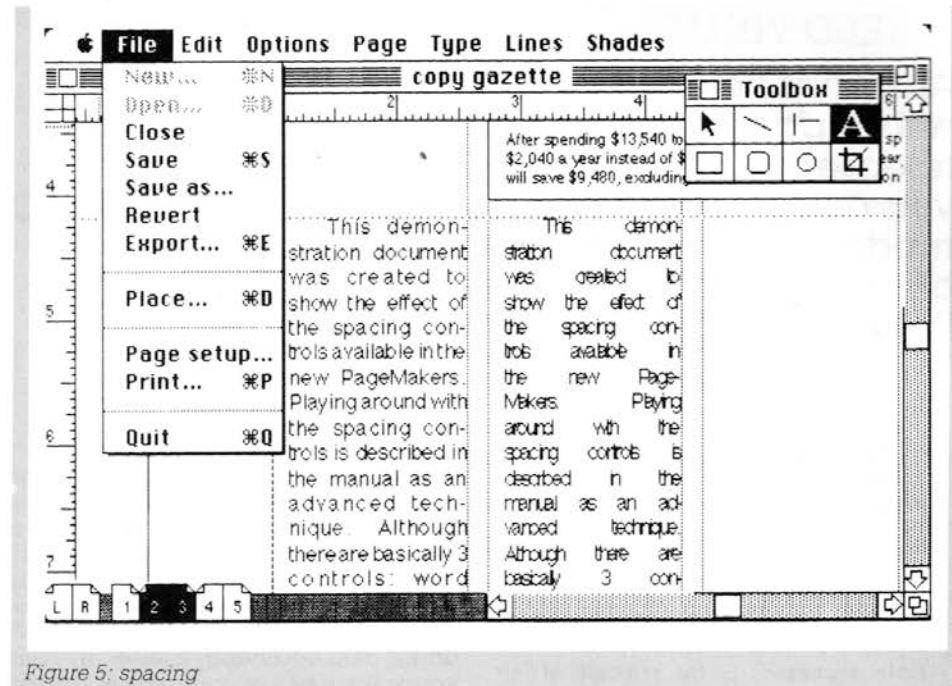


Figure 5: spacing

theoretically take 63 PageMaker v.1.2 files to compose such a thing! The new PageMakers reduce such a mammoth publication to conceivable proportions, and at 128 pages to a new PageMaker document it would take eight files. Such comparisons are really like counting the angels on a pinhead. Nevertheless, from 16 to 128 pages is a quantum leap. A publication of over 32 pages is not uncommon and it is convenient to have it all in one document.

PC & new Mac versions compared

It is easier to say what is different between the two new PageMakers than what is the same. From a user's point of view they are almost identical – which is a very remarkable feat to be achieved by Aldus. PC PageMaker operates in the Microsoft Windows environment. Windows is currently a front end of existing PC/MS-DOS and thus is subject to some severe limitations due to DOS conventions.

Nevertheless, it is a bold effort to make DOS usable and reasonably transparent to the user. Although it differs in some methods of operation it is similar enough to the Macintosh operating system for a Macintosh user to have a head start over a traditional DOS user. A new version of Windows, Windows 2, will be more Mac-like, featuring overlapping windows instead of the tiling or butting windows currently used by Microsoft. More significantly, the new PC operating system for next year, OS/2, will to all appearances be Microsoft Windows with powerful extras.

Figure 6 illustrates the contents of all the menus on the new Mac

PageMaker. PC PageMaker does not have the Export command under the file menu, and also has the Quit and Show Clipboard commands under the Windows system icon.

Apart from that, everything is identical. Nearly all the shortcut key commands are the same too. Where the Mac version uses the cloverleaf-like command key plus another key, the PC version uses the Alt key plus the same letter key. The only exception is in the cut, copy, paste and font style keys where the PC PageMaker follows the Windows conventions of F keys and insert and delete keys. Clearly any user of either version of PageMaker could migrate immediately to the other.

Macintosh users of the previous PageMaker 1.2 will notice far more changes in the details of the menus. First of all, there are many more commands. PageMaker 1.2 did not have an export command, nor clear and select all commands. The menu entitled Options used to be called Tools. PageMaker 1.2 had no Go To Page command (with a maximum of 16 pages it wasn't needed). PageMaker 2.0 has one more line width, a .5 point, while the new version also lists the widths in point size now. A welcome addition is an additional very thin dotted line. The new version has one more shade (30 per cent), and some of the fill patterns differ slightly.

Some of the most dramatic changes are under the Type menu. As mentioned before, the new kerning and hyphenation features are found in the Paragraph command and the new Spacing controls are found under the Spacing command. The mutually redundant Black Type and White Type commands have been replaced by the more useful Reverse Type command.

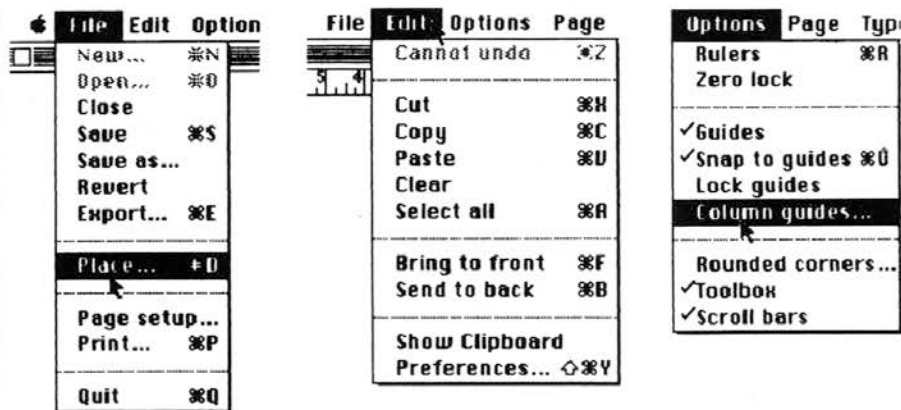


Figure 6: menus

One change which I regard as retrograde is the disappearance of the outline and shadow styles for fonts. The addition of the strike-through style confirms my belief that the new Mac version was made to conform more closely with the PC version and thus the current limitations in Microsoft Windows' methods of handling fonts. There can be only one reason for such strict conformity, and that is file conversion from one format to the other. Unfortunately, I was unable to test the conversion of Mac PageMaker files to PC PageMaker files because the export facility did not work on the late beta version of PageMaker 2.0 which Microsoft provided. However, the new Mac PageMaker did read PC PageMaker files. I can also confirm, for current Mac PageMaker users, that version 2.0 quickly and easily converts version 1.2 files. It preserves the 1.2 file, copies it and converts the copy. Very tidy.

The comparison between the Mac and PC versions of PageMaker really comes down to a comparison of the operating systems that support each version.

So which is better, the PC version or the new Mac version? Without hesitation I must say that the Mac version is better. The new Mac version restores the supremacy of the Mac for publishing by providing those extra features it needed such as auto-hyphenation and kerning. PageMaker on the PC is an equally powerful program, but power isn't everything if usability is impaired. PageMaker on the PC (and here I mean an AT-type 80286 machine – no

less) is slow, much slower than on the Mac.

In addition, PageMaker on the PC, and all graphics-based programs on PCs for that matter, suffer from inferior screen displays. Rather it is the user who suffers. The current best PC display is the EGA standard, but even with all its colours and more than 128kb supporting its graphics adapter it is still mediocre resolution. The Macintosh screen displays more pixels per square inch of screen than the best EGA. Its crisp characters and graphics are bettered only by typeset ink on paper. The new IBM PS/2 series of machines offers an improvement in graphics, a new standard known as VGA with square pixels like the Mac, but VGA drivers were still some time away when this review was written in May. It is possible to get screens of equal or better quality than the Mac for a PC, and Windows has drivers for them (eg. the Genius screen and the Wyse 700 screen), but you pay extra for all that.

The comparison between the Mac and PC versions of PageMaker really comes down to a comparison of the operating systems that support each version. The Mac represents a more mature operating system than the PC with Windows. PageMaker on the Mac makes use of all the text and graphics formats used on the Macintosh with no limitations. This is because the Mac was designed as a graphics machine with consistent file formats and rules for programmers. From its inception the Mac was geared for the substantial processing that graphics require. Windows is also graphics orientated like all new PC programs will be, but currently it is merely a front end for the DOS of text-only yesteryear, so programs operating in Windows are trying to run a graphics race in the ankle-deep mud of old technology.

If that's not enough, what makes life really challenging for PC PageMaker is that the undisciplined world of PC programming past has produced few standards and many competing formats. Thus you have to

read the manual carefully to know which attributes of which word processor will not be preserved when placed in your PageMaker publication. The Windows environment is showing signs of maturity, though; Windows 2 is claimed to improve speed and it would be a safe bet to say that from now on, all new PC software of note will be written exclusively for Windows 2. It's the only way PC users will be able to best achieve the previously mutually exclusive benefits of power and ease of use.

Not the full answer

PageMaker is not the perfect desktop publishing program. Although it is as robust as desktop publishing programs go, it still has a few bugs, while crashes, although uncommon, are also not unknown. Fortunately, the program does 'mini-saves' as you work, so that if the worst happens, you will find a distinctive temporary file which can be reopened.

On odd occasions the program will give unwanted results. One example I encountered on the PC version was when dramatically expanding the point size of some text from say 12 point to 72 point for a headline, the text might make the correct vertical stretch, but not horizontally. The use of tabs within PageMaker is not as satisfactory as within the original word processor. These limitations are rare and do not prohibit any page layout, but they do require an accommodation by the user to find alternative methods.

Despite these few shortcomings, PageMaker is a popular program. It is not the most capable desktop publishing program around; Ventura Publisher would have more features and finer controls than PageMaker. The popularity of PageMaker comes from its positioning as the right product for the most common applications of the desktop publishing market. Few desktop publishing projects would exceed 200 pages and most would be less than 20 pages. In fact, the majority are probably one or two page bulletins and brochures.

The users of desktop publishing don't want to be bogged down by the extra steps the more fully-featured program require to do simple things. PageMaker does the common jobs easily and yet still has the capability of handling sophisticated tasks.

What's more, most people actually enjoy using it. At \$1995 the PC version of PageMaker represents good value, ample power and a better way of communicating. At \$1450 the new Macintosh PageMaker (version 2) represents better value, better ergonomics (less eyestrain), and an edge in speed and usability.

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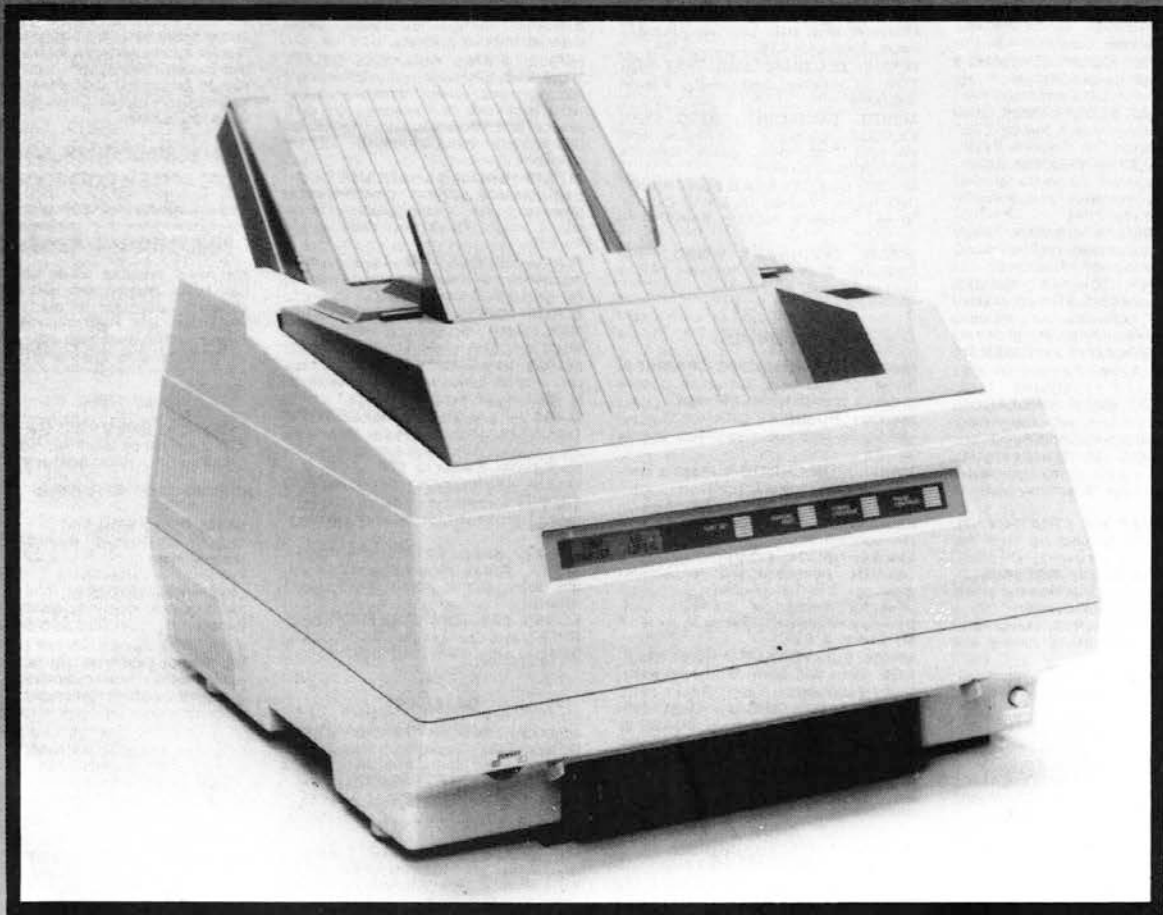
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Continued on page 52

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Programmes are intended for IBM-PC or close compatibles. If Basic is specified then Basica or GWBasic is required. Most programmes are compiled.

EFFICIENCY WITH FILES AND COMMANDS

- U14. **FAKE A KEY** to provide the input expected when batch processing.
- U15. **MULTI-CHOICE MANAGER**. Very cleverly apportions memory so that you can switch between three files.
- U16. **SOUND A TUNE** that lets you know a stage has been completed in batch processing.
- U17. **REQUESTS INFORMATION** in batch file processing. A timed ask utility.
- U18. **MULTIPLE FORMATTING** of disks. Lets you format a lot at same time.
- U19. **SMALL, FAST SUPER DIRECTORY**. Lists directory in 2, 4, 6 columns, sorts, etc.
- U20. **SORTED DIRECTORY**. Screen listing that automatically shows hidden files and offers 2 or 4 columns. Various sorts.
- U21. **PERMANENT DIRECTORY SORT**. Resorts your directory and saves it to file. Will work on subdirectories and hard disks, as well as floppies.
- U22. **SUBDIRECTORY LIST**. Shows subdirectories in a given directory.
- U23. **SPACE ALLOCATION**. Combines Dos Tree and Dir commands to show amount of space to be allocated when files transferred to hard disk.
- U24. **FILE MANAGER** with execution facility for running programmes. Will also copy, view, delete, etc.
- U25. **MEMORY-RESIDENT FILE MANAGER** with multiple windows, variable size. Needs CGA card.
- U26. **BATMAKER**. Creates bat files containing all matching files. This is great when using Find in a text search.
- U27. **MENU PROGRAM**. Allows for tailor made menus. Good screen appearance.
- U28. **GO TO DIRECTORY** directly on a hard disk. Reduces amount of keyboard work.
- U29. **SECONDARY DOS**. Lets you suspend currently executing application and invokes a secondary Dos command processor so new commands can be executed.
- U30. **ALLBUT** the programmes you specify can be acted on. Eg. delete, copy, etc.
- U31. **MEASURE** the time your computer takes to execute commands.
- U32. **DISK ERROR MONITOR**. A resident programme that monitors disk errors and gives more information than the abort/retry/ignore message.
- U33. **REMEMBER COMMANDS**. Remembers last 50 commands which may be edited or executed.
- U34. **RENAME A DIRECTORY**.
- U35. **DISPLAY COMMENTS FROM CONFIG.SYS** file when booting up.
- U36. **BUILD DIRECTORY FILE WITH COMMENTS**. Has asm source code so that you can tailor to own needs. Produces list of files with size, crc, file no. and space for comments.

FILE PRINTING/EDITING

- U130. **PRINT ITALICS**. Set printer for output in italics. Epson compatible.
- U131. **PRINTER RESET**. Resets printer to power-up mode.
- U132. **GRAPHIC SCREEN DUMP** for Epson compatibles.
- U133. **SET 51 LINES PER PAGE** on Epson compatible computer.
- U134. **SET 132 COLUMNS PER PAGE** on Epson compatible computer.
- U135. **SET UNDERLINE MODE** on Epson compatible printer.
- U136. **SET COMPRESSED PRINT** on Epson compatible printer.
- U137. **SET ENLARGED PRINT** on Epson compatible printer.
- U138. **SET WIDE PRINT** on Epson compatible printer.
- U139. **SET EMPHASISED PRINT** on Epson compatible printer.
- U140. **SET EXTENDED CHARACTERS** on Epson compatible printer.
- U141. **PRINT SPOOLER**. Creates a 16k buffer in memory, which allows you to do other work whilst printing.
- U142. **DISK-BASED PRINT SPOOLER**. Uses capacity of disk as buffer for printing, allowing you to continue with other work.
- U143. **SEND ESCAPE (ESC) SEQUENCES** as part of command, such as for printing.
- U144. **WORD FREQUENCY**. Counts number of times each word is used in a text file.
- U145. **FAST WORD COUNT**. Provides count of words, characters, lines, plus a mathematical check sum, which allows you to compare text files for changes.
- U146. **APPOINTMENT REMINDER**. Stores data on disk like a daily appointments diary. Prints details of next 7 days.
- U147. **PRINT WITH NUMBERED LINES**. Great for listing source coding.
- U148. **SIMULTANEOUS EDIT** of multiple text files. Lets you make the same text changes to several files at once.
- U149. **WORD LENGTH ANALYSER**. Checks the length of words in text and compares with readers' level of schooling.
- U150. **TEXT CHECKER**. Examines Wordstar files for typing errors such as missing brackets and quotes.
- U151. **TEXT FILE SORT**. Fast and works with very large files.
- U152. **LIST NON-ASCII BASIC FILE** without loading Basic. Also helpful for listing if you don't have Basica/GWBasic.
- U153. **PAUSE LISTING** so that printer will produce 55 lines on a page.

EQUIPMENT HANDLING

- U406. **CONTROL BACKGROUND/ FOREGROUND COLOURS** as displayed on your monitor.
- U407. **HARD DISK PERFORMANCE TEST**. Checks the running of hard disks.
- U408. **COMPUTER LOG** to keep track of amount of time of computer usage, how time spent.
- U409. **ELECTRIC TYPEWRITER**. Converts computer into electric typewriter (for notes, envelopes, etc.).
- U410. **KEYBOARD OPTIMISER** that will set cursor size, give type ahead buffer, more. Easy to use command line editing.
- U411. **MAP RESIDENT PROGRAMS**. Shows program addresses, possible conflict.
- U412. **TRACK MEMORY** as programs are running. Has windows and more.
- U413. **MEMORY ORGANISER**. Determine, mark, release, allocate, display memory. Shows how files are loaded in memory.
- U414. **MULTI-SCREEN**. Allows output to be directed to more than one screen. Needs CGA. Multitasking features.
- U415. **NEW ANSI.SYS** that may aid screen presentation and allow faster execution of many functions.

- U416. **BLACK & WHITE MODE** can be switched on colour graphics card.
- U417. **TIMEPARK HEAD** of hard disk after a specified time has elapsed.
- U418. **SET 40 or 80 screen columns** BW mode on colour systems.
- U419. **STATUS REPORT** on system, including information about drives, memory available.
- U420. **SPEED TEST (1)** checks processor speed and compares with IBM-PC. Similar to Norton test.
- U421. **SPEED TEST (2)** checks computer speed in two areas, including Sieve calculation and track to track access time, and compares with IBM-PC.
- U422. **SPEED TEST (3)** comprehensive checks on processing, including block write, register/memory, multiply, divide, stack operations, far jumps, etc., and compares with IBM-PC.
- U423. **RAM TEST**. Tests and tests and tests ram. Identifies faulty memory.
- U424. **DOS ENVIRONMENT VARIABLE EDITOR**. Make changes to edit path, prompt, etc.
- U425. **EXPAND DOS ENVIRONMENT SPACE TO 1K**.
- U426. **FLIP ON/OFF (TOGGLE) DOS PARAMETERS**. Works on several standard Dos parameters.
- U427. **WHAT PROCESSOR?** Examines and identifies the processor/s being used, such as 8088, 8086, etc.
- U428. **WHAT DEVICE DRIVERS?** Examines and reports on devices (eg ports) installed in your computer.
- U429. **WHAT DOS CONFIGURATION?** Examines and reports on memory, vector addresses, and statistical information about version of Dos you are using.
- U430. **WHAT EQUIPMENT?** Examines your equipment and reports on the installed drives, type of cards (eg, printer, colour, mono, RS232) etc.
- U431. **EDIT RAM STORAGE** in your computer.
- U432. **DRIVE STATUS**. Reports on no. of bytes, sectors, clusters-what capacity is and how much is free.
- U433. **DIAGNOSTICS**. Performs large number of computer diagnostics and reports on serial, parallel ports, video, etc.
- U434. **DRIVE TEST**. Floppy disk test drive utility.
- U435. **SLOW AMSTRAD 1512** Programs e.g. games that run too fast.

FILE MOVING

- U511. **HARD DISK UNERASE**. Exceptional features. Most unerase utilities don't work on hard disk - this one does!
- U512. **DELETE ALL BUT** those programs you identify.
- U513. **INTELLIGENT COPY PROGRAM** that creates sub-directories as part of the transfer. Also renames rather than over writes.
- U514. **SUPERIOR COPY PROGRAM** that checks and evaluates target before copying. Eg. copies last dated version.
- U515. **UNIQUE COPY PROGRAM** with same function as E.E but does not copy those already on target disk.
- U516. **TREE SURGERY**. Prune files unwanted/ duplicated on hard disk. Has source code and compares files with the same name.
- U517. **KILLDIR**. Delete a branch of a directory. Reduces steps and saves time.
- U518. **MOVE DIRECTORY** around if you prefer it stored in different location.

FILE ORGANISATION & CHECKING

- U611. **BOMB ALERT**. Examines new files for malicious intent and reports on possible danger to other files.
- U612. **BASIC MENU GENERATOR**. Better access to your Basic files through a menu. For Basica/GWBasic.
- U613. **UNQUEUE ARC FILES**. Small, efficient utility that occupies less space and is simpler to use than Arc.Exe.

- U614. **HARD DISK OPTIMISER**. Related group of files that optimise hard disk usage and eliminate file fragmentation. Helps pack the disk.
- U615. **FILE RE-ORGANISER**. Regroups a fragmented file into contiguous sectors on a disk for more efficient disk access.
- U616. **RECOVER BAD SECTORS**. Records data on disk. Does 12 retries and thus may recover bad sectors.
- U617. **COLLECT BAD SECTORS**. Marks bad sectors for collection into a separate file that will not be used. Works with floppies and hard disk.
- U618. **ADVANCED COMPARE** facility that can save as edit script, generate and update deck.

SPECIAL FEATURES

- U805. **PREPROCESSOR FOR "C" COMPILERS**. Has "C" source and helps organise coding into efficient form for compiling.
- U806. **VOICE EMULATION**. Compiled with Basica source module which allows extensions, revision or use as tutorial.
- U807. **DEMONSTRATION OF COMPUTER GRAPHICS** for those who have CGA.
- U808. **DAYS SINCE JAN 1ST**. Calculate no. of days elapsed since beginning of year. Needs Basica/GWBasic.
- U809. **BINARY FILE CONVERTER**. Converts files from machine language to hex equivalent for examination and modification.
- U810. **CAPTURE BIOS** contents and store in a separate file.
- U811. **EXPLORE FAT (FILE ALLOCATION TABLE)**. Shows the table entries, starting clusters of files, etc.
- U812. **MINICALC**. A small, easy to use spread sheet with 11 x 22 cells for quick every day use.
- U813. **PROGRAMMER'S CALCULATOR** which does special hex and other calculations for those writing programs.

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- | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
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| 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 |
| 152 | 153 | 406 | 407 | 408 | 409 | 410 | 411 | 412 |
| 413 | 414 | 415 | 416 | 417 | 418 | 419 | 420 | 421 |
| 422 | 423 | 424 | 425 | 426 | 427 | 428 | 429 | 430 |
| 431 | 432 | 433 | 434 | 511 | 512 | 513 | 514 | 515 |
| 516 | 517 | 518 | 611 | 612 | 613 | 614 | 615 | 616 |
| 617 | 618 | 805 | 806 | 807 | 808 | 809 | 810 | 811 |
| 812 | 813 | | | | | | | 435 |

Better economy is provided by permitting separate replacement of toner, developer and photoconductor

SPECIFICATIONS:-

Print method – electrophotography, LED array (fixed head, single row).
 Printing System – OPC: Photosensitive drum, 2 layer coating, conductive base photoconductive outer layer.
 Charging: Corona. Exposure: LED array. Development: Dry toner, dual-component. Image transfer: Corona transfer. Separation: Fixed belt and roller. Fixing method: Heater roller. (230v lamp wattage = 600w)
 Warm-up (wait) time – Less than 2 minutes from power on.
 Print speed – Hopper: 8 pages per minute (letter).
 Time for first print – 20 seconds or less (hopper) or 22 seconds or less for manual feed.
 Print density – 300 x 300 DPI.
 Paper size – hopper: 8.3" x 11.7" (A4) 8.5" x 11.0" (letter) 7.2" x 10.1" (B5) 8.5" x 14.0" (legal)
 manual: width: 5.5" – 8.5" Length 5.8" – 14.0"
 Both paper and OHTransparency film.
 Paper weight – hopper: 60-75 gsm manual: 56-90 gsm
 Paper capacity – hopper: 250 sheets optional second hopper: 250 sheets stacker: 250 sheets face-down optional face-up tray: 20 sheets
 Printable page area – A4: 7.8" x 11.3" Letter: 8.0" x 10.6" B5: 6.7" x 9.7" Legal: 8.0" x 13.6"
 Environment specifications – operating temperature range: 10-35 degrees C. Humidity: Operating 20-80%. Storage: 20-90%.
 Noise Level: Printing 52dBA, Standby 45dBA.
 Power requirements – input voltage: 230v +/- 15%. Frequency:

You will recognise the outstanding features of this new page printer as you compare the following details. The LC-800 allows portrait or landscape printing, and dual font ports controllable from the front panel. This, plus a page rotation feature, permits spreadsheet printing too. It is also capable of handling those graphics with its selectable layouts.

However, let's begin at the beginning and see how easily used this LED printer proves to be. Taking home the medium-sized box together with the NEC AT and screen was no hassle in the car. Setting up, putting paper in the input bin and inserting the drum inside the front cover of the machine (from its carrying pack) was quite straightforward. I then used my normal serial printer cable to connect both machines. Organising the

necessary programs and files to print took little more time, and we were in business.

The automatic microcontrolled setup cycle of the printer ran smoothly through its paces, with the small indicator panel showing the state of the play each step of the way, a process that takes less than two minutes. When the ready sign showed on the front panel the test sheet was simply called through a double key press, and the wealth of fonts and other symbols poured out. After several pages had covered all symbols it was easily stopped.

A test run through the font change switching, and we fed some files down from the NEC AT (APC IV Powermate). In practice these take little time, with the machine indicating what is happening on the small indicator panel to the left. Multiple copies are available and flow more quickly after the first page is composed.

The LC-800 delivers eight letter-quality pages a minute (300 x 300 dots per inch) on paper or OHP transparencies. It is surprisingly quiet. You hardly notice the paper motion begin and all pages are collated in printed order in the 250 sheet output bin at the front. The input bin holds some 250 sheets also. An optional dual sheet feeder can be used for two different paper types (useful for letterhead and then plain paper). A manual insertion slot is provided and a front output slot and 20 sheet tray for face-up requirements. These machine layout arrangements provide a very flexible and neat output format.

Choice of the four resident and up to 8 optional fonts is given through the font set control, selected by cycling through each in turn to make your choice. The manuals cover all the necessary information well and give extra details to assist with the easy maintenance needs as they arise. The option of coloured toner should provide good variety in output products.

Economy in design

A significant manufacturing choice in this machine is the three cartridge printing system. Better economy is provided by permitting separate replacement of toner, developer and photoconductor. This makes the LC-800 so much easier to maintain and reduces the cost per page (claimed up to 40 per cent). By only replacing toner or drum when necessary a much longer service life is provided.

Service reliability is claimed for 5,000 pages per drum or toner, depending largely on type of output, with an overall life of 300,000 pages before the machine is sent back to NEC for refurbishing.

Significant difference

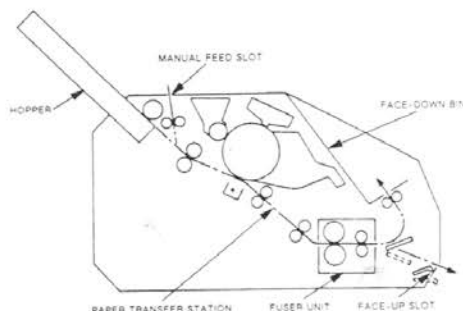
The central secret of this system is the LED light source arrangements. Here a fixed line of 2,432 LEDs (light emitting diodes) is self-aligned to the photoconductor, eliminating distortion (and with no moving parts, any wear areas). This single row of fixed

PROBLEM SOLVING

Although your printer is highly reliable, simple problems can occur. The printer's display aids you in detecting and solving these problems.

Paper Jam

When the paper path is blocked, a paper jam occurs and "PAPER JAM" displays. The locations of potential paper jam areas are shown below.



50/609 hz +/- 1 Hz. Current capacity: 230v 4A.
 Regulatory compliances - UL-478. CSA-C22.2 No. 154 VDE 0806
 (IEC 380) FAC Class B VDE 0871 Class B
 Interface - Dual I/F - Centronics parallel/RS232C; selection by
 dip switch or control code
 Line feed - 1,2,3,4,6,8,10,12,25,50 line/inch and N/50. 1/300" *
 step feeding.
 Spacing - 10 CPI, 12 CPI, 17 CPI, Proportional spacing N/150 (1/
 300" step spacing).
 Fonts - Resident: Courier 10 pitch (Portrait)
 Courier Italic 10 pitch (Portrait)
 Courier 12 pitch (Landscape)
 Courier Symbol 10 pitch (Portrait)
 Optional font cartridges: Type A: 1 Font (64k)
 Type B: 2 fonts (128k)
 Type C: 4 Fonts (256k)
 Microprocessor - 7810 (2) 80186
 Main memory - 128k bytes
 Graphics - Full page: 75 x 75 DPI
 1/2 page: 150 x 150 DPI
 1/8 page: 300 x 300 DPI
 Optional 1.3 Mb Memory Board - Full page: 300 x 300 DPI
 Vector Graphic Functions
 Dimensions - Width: 470mm Height: 280mm
 Depth: 530mm Weight: 30 kg
 Supplies - OPC Cartridge
 Toner Cartridge
 Developer Cartridge
 Options - 2nd Paper Hopper Font Cartridges
 Face-up tray 1.3 MB Memory Board
 Dealer - Sold throughout New Zealand by dealers supplied by
 NEC Information Systems, 80 Greys Ave, Auckland.

**The central secret of
 this system is the LED
 light source arrange-
 ments**

tiny light bulbs reliably transmits light directly onto the drum. Each LED creates a .004" dot. These dots have a 1/300 pitch, overlapping about .001". The light striking the photo-conductive drum causes local regions to become conductive and lose their charge.

As the drum rotates this latent image region passes close to the magnetic roller and transfers the image into the developer material. This image in toner is passed onto the paper and fused through the heat and pressure roller. Finally a scraper removes the residual toner and the erase lamp prepares the drum for further image.

This is the significant difference of this system when compared with laser printers and their complicated and difficult system layouts.

Another performance enhancement area is the extension memory available above 128kb to 1.3 Mb allowing the full-page bit-mapped graphics production. At 300 x 300 dots per inch this is good resolution for integrated graphics and text in a special manuscript or desktop publishing or similar activity. See examples herewith of this type of output.

Business efficiency

The practical problems of fully successful computer interfaces with the printer has been well solved and this machine worked very well attached to the NEC APC IV Powermate. Other computers of equal compatibility

should have little trouble driving this system as well. The use of the normal interface programs provided in Word 3 allowed my easy use of this machine. Unfortunately I was unable to try such arrangements on other computers during the time I was testing various combinations of programs and outputs.

Other fonts may be attached through the two ports at the lower front edge of the machine. These can each contain four other fonts, and some other special typefaces to enhance documents may be added in this way also.

After some difficult experience with some other laser type printers this LED machine proved to be an outstanding operator. Gone are those infuriating interfacing problems, (and their costs in time and effort in setting up), and here is a truly business efficient offering. Costs in the market place are said to be considerably

cheaper than many laser printers. I recommend your serious look at this contender in the new print technology market, and am sure you will not be disappointed.

Price quoted for the machine as reviewed is \$6,690 plus GST, and two further models of the LC-800 are being released this month, both having the same eight pages per minute printing speed. The HP LaserJet Plus emulation version will feature 1.5Mb memory and dual sheet feeder as standard, two font cartridge slots, and both face-up and face-down paper stacking for around \$7,995 plus GST. The Apple-compatible PostScript printer, at \$10,995 plus GST, will have PostScript and HP LaserJet graphics modes, 3Mb memory, parallel/RS323C/RS422/Appletalk interface, two font cartridge slots and 35 resident Adobe fonts.

Review machine supplied by NEC Information Systems, Auckland.

* Character Style

Normal	Horizontal	Vertical	Square
Bold	Horizontal	Vertical	Square
Shadow	Horizontal	Vertical	Square
Italic	Horizontal	Vertical	Square

* Screen print

LED PRINTER LC-08

LED PRINTER LC-08

* Another Example

$$\int_0^2 x \, dx = \frac{1}{2} [x^2]_0^2 = \frac{1}{2} (4 - 0) = 2$$

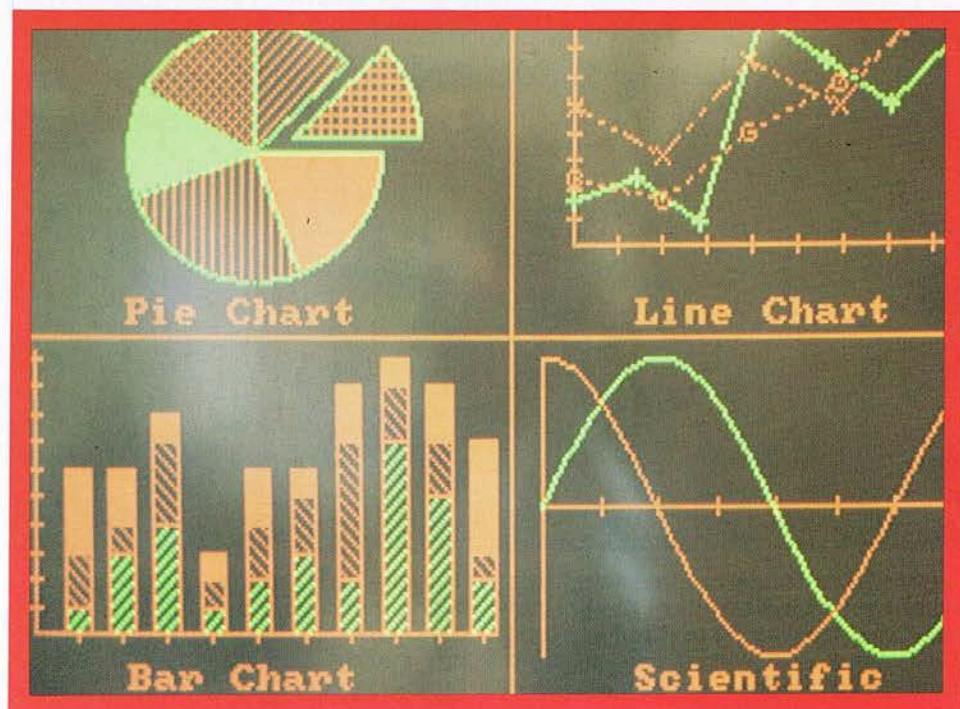
* Reverse



LED PRINTER LC-08

Fast thoroughbred from

by Roy Purvis, ME



The spread of software for AT-compatible computers has been rapid and has been associated with a large number of manufacturers producing hardware with the same architecture as the IBM PC/AT. This example comes from renowned Japanese printer manufacturer, Seiko Epson Corporation.

The Epson PC/AX comes with good standard features one would expect today, such as a high-resolution colour screen, EGA graphics, high density floppy drive, extended keyboard with separate cursor keys and numeric keypad, 40Mb of hard disk and 640kb of memory. The first impressions are of a substantial unit, but this is only the beginning. Take the cover off and there is obviously lots of room to grow: spare slots for add-on cards, spare spaces for tape and disk drives, and a big 200-watt power supply to run it all. Anything that can be added to an AT will fit in here without the need for externals, which makes me think that perhaps the unit is targeted towards the multi-user market, as well as those requiring high-speed workstations for CAD or graphics.

It comes with MS-DOS 3.2 and some Seiko utilities which add to DOS some functions which should already

be there. For example, Term is the communications program for talking to another computer through the standard serial port. It's also very useful for setting up the serial port parameters for any other purpose, because it has an easy-to-use menu-driven screen.

It comes with MS-DOS 3.2 and some Seiko utilities which add to DOS some functions which should already be there.

Also included are archive and restore utilities which make the use of MS-DOS's backup and restore commands a whole lot easier than when reading through the manual and try-

ing to figure out what all the slashes and options are supposed to be. This again is a menu-driven program which utilises the standard MS-DOS commands but in a much more user-friendly way. These sorts of additions to MS-DOS, I believe, are very good and I hope we see more of them coming out to overcome some of the areas where MS-DOS tends to be a little bit cryptic and Unix-like, such as in restoring files.

Keyboard

Not being a man of keyboard skills, I invited a couple of friends to try out the sculptured keyboard, and they were most impressed by the very positive feel of this solid unit. It has a bit of weight to it - it's not going to float around. The 12 function keys are arranged along the top, with nine system keys such as Print Screen, Pause, Insert, Delete etc, the usual cursor keys and, separate from that lot, a numeric keypad with Enter alongside Plus and Minus. All this is in addition to the standard qwerty keyboard layout with large shift keys.

The typist found it very easy to type quickly on this unit and enjoyed the long stroke of the keys. The journalist, however, was a much more heavy-handed typist and said it still lacked that solid feel of a good typewriter. The keys do tend to go down with one even pressure and hit the bottom, rather than having a pressure change built into them, but that was no problem to the touch typist. In all, I think it's probably the best clone keyboard I've seen, and with a layout much the same as the latest from IBM.

Colour display

The display unit has very good colour resolution and is a lovely display to look at. There is, however, a high level of reflection and I would like to use it with one of those anti-glare mesh filters that are readily available today. They are well worth it for the eyes, especially when ill-placed lights are scattered all over the office, reflecting on the screen from every direction.

It is, as far as I could tell, a standard EGA type of monitor with a 22kHz scan rate and the EGA card located

Japan

on the computer's main board. As can be seen from the photos it turns out some nice graphics, although I should point out that these are generated in CGA mode and that the blocks are not particularly well defined, but the display does a very good job on it.

Plenty of room is available with one 8-bit and five 16-bit slots remaining

The high-resolution 14-inch RGB colour monitor itself comes from High Tech Associates in Japan. I loaded a termulator program which has an interesting set colour screen, putting colour bars right across the screen, and the monitor handled this very well, with no problems at all.

It's also interesting to note that the speed of display is very fast indeed, filling up a screenful very very quickly.

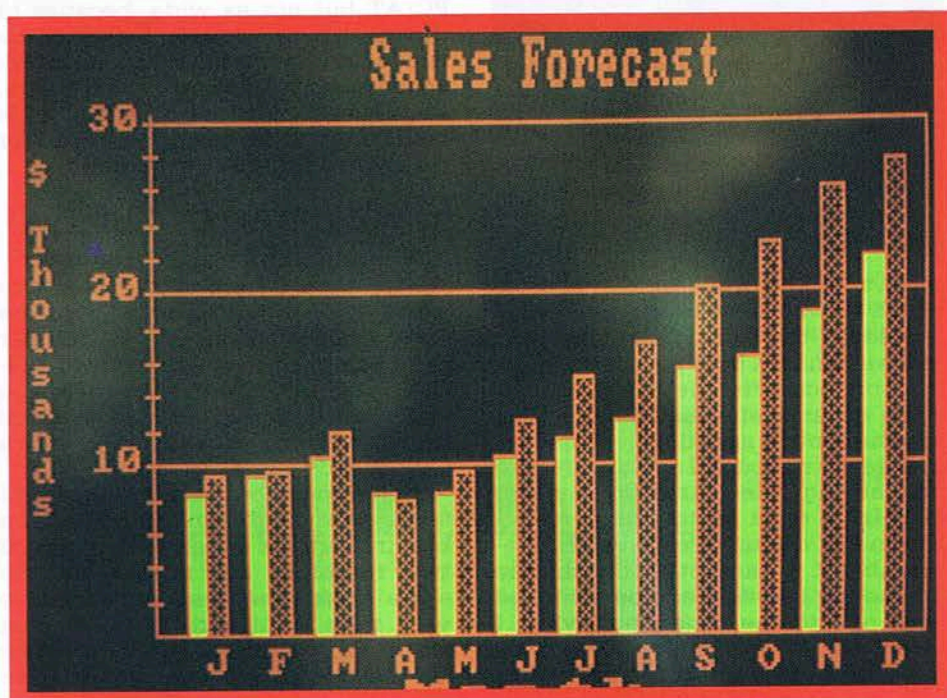
This computer is obviously no slow-coach. Speed it certainly has got, with a 10MHz 80286 microprocessor and high-speed RAM with 100ns access time. More on this later when we get down to the benchmarks.

Inside

Let's take a look inside the case. I always like to take the nice frilly bits of plastic off the outside and get down to what's actually happening.

The Epson has a strong steel chassis which does flex a bit, but I think that's due to the PC boards being so small, and there shouldn't be any real problems of flexing, causing faults on the board as the unit is carried around. With the cover screwed on it stiffens up significantly to become a rigid unit.

It is completely shielded all the way around. Requirements are increasing for computer equipment to meet American FCC specifications on radiated noise, and I have found that they are all still a little bit noisy. In fact, most of the noise comes from the monitors, so I'm looking forward to the day when monitors have steel cases as well as the computers themselves. I think that used to be the case some years ago, but we are now in

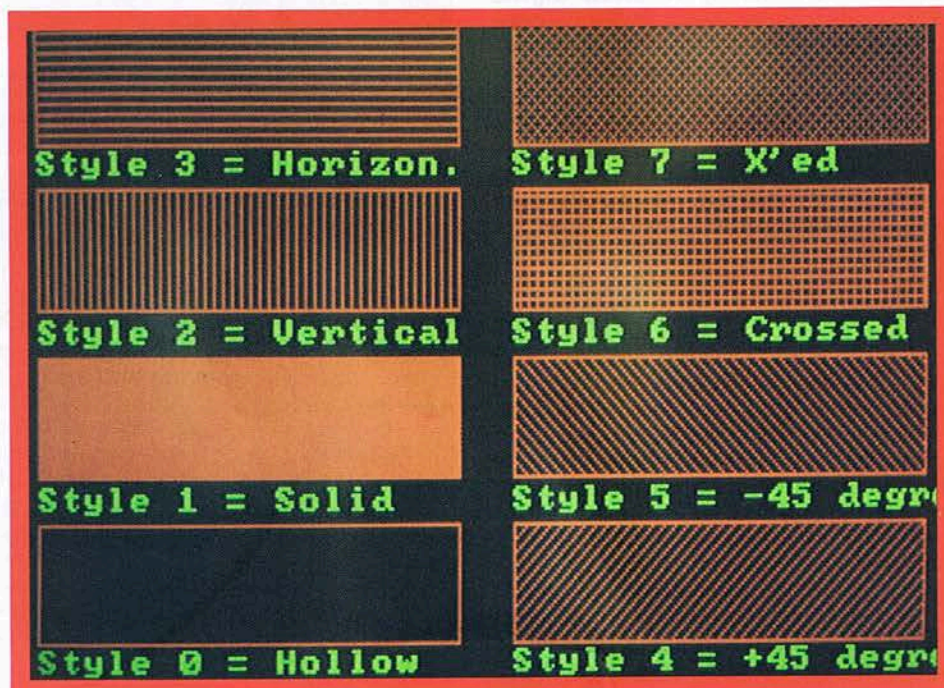


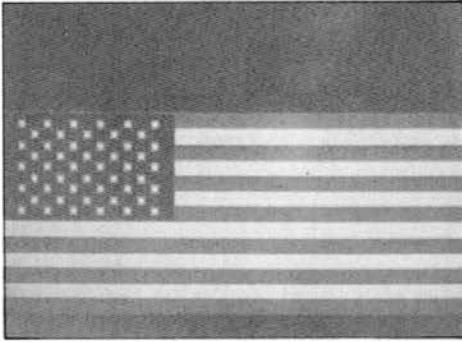
the age of plastic, and unfortunately plastic is not a very good shield to the RF noise which seems to permeate the office these days. I've tried to run a computer and a microwave oven in the same room as a radio, TV and radiophone, and the results were disastrous. It's time New Zealand adopted the same RFI standards as West Germany.

Inside there's a CPU board which measures just 200 x 200 cm, very small, thanks to some custom Epson VLSI chips which appear to do most of the logical functions surrounding the

processor, and no RAM. The RAM is through a connector on an adjacent board, which presumably allows optional amounts of memory, this one having a 640kb board.

And then there's another connector which moves on to a system bus with all the familiar edge connectors of an IBM PC/AT. Six of them are 16-bit AT slots and three are only for 8-bit data as found in a PC. This arrangement makes the CPU board readily removable without having to dismantle the whole machine, and in fact there are some special clips and





screws in the front of the chassis which allow it to be taken out easily.

Also on the front panel, normally hidden behind a little plastic door, are the connector for the keyboard and some other useful facilities such as volume control, speed selection of 6, 8 or 10MHz (although I must confess to not having tried anything except 10MHz), a reset button and a monochrome or colour select switch. Presumably if it has both monochrome and colour boards it can be switched from one to the other, but when I switched it to monochrome the machine booted up telling me I'd got it all wrong, so I put it back to colour and made it happy again.

I expect that running something like Theos, Xenix or Pick the Epson PC/AX would happily cope with six users

Three of the slots are occupied, one with a hard disk controller made by Seiko and utilising Western digital chips. Another has a clever card which provides all the basic necessities of I/O and is a floppy disk controller and serial port and parallel port together, taking up only one slot. The third slot contains of course the video display card.

Plenty of room is available with one 8-bit and five 16-bit slots remaining, so whether the user wants to put in tape interfaces, megabytes of memory, serial ports, network cards or special boot cards that people come up with, there's plenty of space and it's a full-height cabinet, allowing the insertion of some of the AT boards which are higher than PC boards. The good quality NEC two-speed floppy drive can use 1.2Mb, 720kb or 360kb disks.

Talking of space, there's also a whole lot of room in this cabinet for extra 5.25 inch hardware such as tape and disk drives. I guess you could put in a high-speed large full-height hard disk, high-density floppy drive, 3.5 inch floppy and a tape drive. The

power supply is enough to run the lot, but despite all that, the unit is in fact not overly large. It's similar to IBM's PC/AT but not as wide, because of the much more compact Seiko boards inside and the fact that the hard disk space has the drive sitting on its side, so it's only about 3.5 inches wide instead of the 5.25 inches needed for the normal horizontal mounting.

Speed and compatibility

I ran up a couple of standard programs like Lotus and Word, and the Epson PC/AX seemed to be 100 per cent compatible with standard MS-DOS and PC-DOS, and I ran up Norton utilities which told me all the usual things. Norton Sysinfo came up with a CPU speed of 10.1.

I might point out at this stage that I found a bit of what might be called a bug in Norton's speed test, in that if two machines are running at the same clock speed and one has zero wait state RAM and the other wait state, Norton doesn't seem to know the difference. However, we do have some benchmark programs which do more exhaustive testing of the computer's performance ability, so we loaded down a multi-user operating system, Theos 286V, and ran IBCbench on it to compare with other ATs we've looked at.

The results are set out in the table, and this machine initially beat all the other ATs in every respect except

disk read/write speed which was initially disappointing. It was a 20Mb unit which Epson said had a slow stepper drive, and the standard AX units are supplied with a much faster 40Mb Miniscribe drive. We later installed the proper 40Mb hard drive, which improved the disk random read/write test from 630 seconds right down to 413 and gave a fast overall result.

With the proper Miniscribe drive this would indeed be a multi-user or multi-tasking machine. I expect that running something like Theos, Xenix or Pick the Epson PC/AX would happily cope with six users, and these operating systems allow the use of simple dumb terminals through multi-port cards, providing serial ports to each user. Each runs in its own partition of RAM, being talked to by the 80286's special abilities in the multi-user field.

Conclusions

The Epson is a well-engineered piece of advanced technology, based on conventional architecture and a well-known microprocessor. It doesn't offer anything new, but rather minor improvements on a proven system, and I can see it being a reliable office tool for many users. As they say, first choose your software, and if an 80286 computer is required, the Epson PC/AX will do well.

	IBM PC/AT	TeleCAT 286	Sperry IT	ITT Extra	Epson AX	units
Norton	5.7	7.3	8.3	8.6	10.1	PC=1
Primes	1.0	1.36	1.43	1.64	2.18	AT=1
Disk I/O	490	425	432	403	413	sec
IBCbench	357	278	249	256	250	sec

Microcomputer Summary

Model	Q201A
Name	Epson PC/AX
Manufacturer	Seiko Epson Corporation
Processor	80286 10MHz
ROM	64kb BIOS
RAM	640kb 100ns
Disk	floppy drive: 2-speed 1.2Mb or 360kb 40Mb hard drive
Keyboard	Qwerty keys plus 12 function keys, separate numeric keypad and cursor controls
Display	high-resolution 14 inch colour monitor RGB EGA card, 640 x 350 pixels
Expansion	4 device slots for 2 full-height, 2 half-height (or 4 half-height) units, 6 slots for cards
Power	230Vac 200w
Bundled software	MS-DOS 3.2 and diagnostics
Price (\$NZ excl. GST)	\$4869 single floppy drive \$7745 40Mb fixed disk \$30 desk stand

Review unit supplied by Epson NZ, Auckland

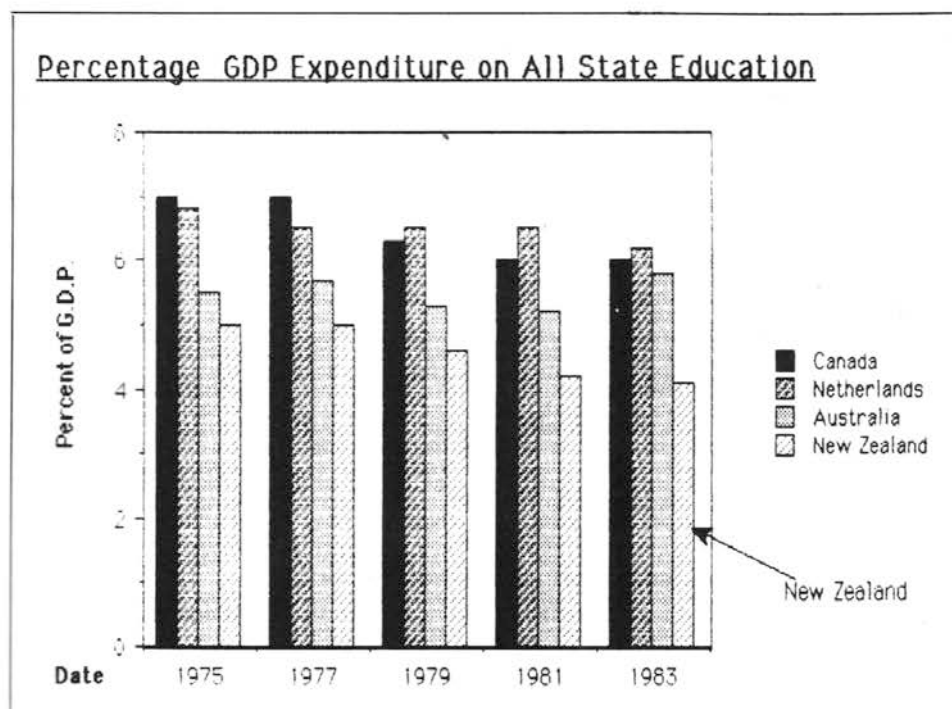
Several publications have passed over my desk in the last month which give pause for thought. Together they put a clearer perspective on the direction for educational technology and the current situation in New Zealand, from Kohango Reo down to the universities. Two of them should be compulsory reading for anyone interested in the area, especially in an election year.

The first snippet came from the *OECD Observer* (January 1987) in an article entitled 'The Cost of Education: Doing Better with Less'. It didn't have a question mark at the end – perhaps it should have – but it provided a table with the share of GDP going on education for each OECD country for five years between 1975 and 1983. In a class of 19 in 1975 New Zealand was only fifth from bottom with 5.0 per cent of GDP going on education. By 1983 the percentage had slumped to 4.1, and New Zealand was a couple of places more down the list.

There are various factors at work here, but the picture looked a little unhealthy. It was cold comfort that some other nations also appeared to be suffering from the odd phenomenon of calling for education directed to the new technologies while cutting the budgets needed to provide new resources for these initiatives.

This was thrown into deeper relief by a copy of the CTISS file from the UK. (CTISS stands for Computers in Teaching Initiative Support Service, a small unit at Bath University funded to facilitate the creation of resource networks, particularly in the tertiary sector.) The file contained an extract from Theodore Roszak's *The Cult of Information*, which is probably another key book to read, judging from this brief extract.

The extract itself, like the book, was a plea for sensible application of technology, but gave a few figures on what was viewed as necessary funding levels to equip a campus for teaching. The National Science Foundation in 1981 estimated that a small (5,000 student) university would



universities of course are not alone in this; much of the education system is being exhorted to equip students for new technology (read the Beattie Report) and then being given inadequate tools to do so.

The contrast between the technological needs in education and what is happening in the real world is thrown into starker contrast by Lambert and Ropiequet's book: *CD-ROM the New Papyrus*. With 583 pages it is one of the few books of that size that can keep a reader excitedly dropping back in and reading new chapters. It consists of some 40 or so papers on aspects of publishing using CD-ROM, that is Compact Disks physically similar to the audio variety but encoded with digital data.

The storage and recall capabilities of this medium are quite phenomenal, as anyone who has seen a demonstration of the *Grolier's Electronic Encyclopedia* will testify. The efficiency and publication economy of CD-ROM (5-10 per cent paper costs) ensure that it is going to be a major technology for

careful appreciation of how it functions, especially what it cannot do and what the user must do to get the best out of it. Someone in the book speaks of 'an informational tsunami' being on the way. That may be hyperbole, but watch and see the impacts in education.

Finally I got a copy of *New Information Technologies: A Challenge for Education* on library interloan. This is another OECD publication but comes out of the Centre for Education Research and Innovation in Paris. It is a solid text: although only 120 pages long it crams in a lot of comparative material. It is largely written by Carla Fasano, now professor of education at Wollongong University. In this report you will find cited and neatly encapsulated much of the research on what computers do in education... the alleged lack of which has been consistently cited by politicians in New Zealand as a justification for inaction with educational computing policy. While some of this material is very culturally specific, there is no

A sense of perspective

need to spend \$30 million to fully equip with computing technology. That is US dollars and using US computer prices. A New Zealand equivalent might be three or four times that, less any drop in computer costs since 1981.

At current rates of assistance to universities might we be able to equip a small campus to that standard by 2020? That is a deliberately sensationalist use of the figures, but no counter argument can deny that resources are totally inadequate. Uni-

versities of course are not alone in this; much of the education system is being exhorted to equip students for new technology (read the Beattie Report) and then being given inadequate tools to do so.

The medium really does have a great potential for rolling back many of the boundaries of current information systems, but will itself need a

denying the breadth of material on show here. Teaching issues, budgetary issues, curriculum issues, policy strategies: all get thorough coverage.

It is fascinating reading, especially from the standpoint of an educational system which has been slow to accept the role of information technology in education. You will find

(Continued on p.68)

by Pip Forer

Where in the World is Carmen Sandiego?

by Michael Raich

This is a package I have been successfully using in the classroom for the past two years. I am a teacher at Caversham School, Dunedin, a contributing school of about 250 pupils. It does not have a computer, but I have my own Apple IIe Enhanced, and over the years I have built up a reasonably good library of educational software.

However, information about quality educational software has been a problem for many teachers in our area. Word-of-mouth recommenda-

tions and the occasional review in *Bits & Bytes* have been all that many of us have had to go on, and I hope others may find this review of interest.

Where in the World is Carmen Sandiego is a simulated adventure game of the highest quality. It has impressive, imaginative colour graphics which are supported by a well-written and easily understood text. The user's manual is cleverly disguised as a *Private Investigator's Dossier* and

makes for enjoyable reading.

The program is produced by Broderbund Software (Printshop, Dazzle Draw, and Bank Street Writer...) and operates on Apple computers of at least 64K (IIe, II+, IIc). It can make use of either keyboard, mouse or joystick controls. The package includes a program disk, the user's manual and a current edition of *The World Almanac*. I bought my copy from the USA for about \$NZ60 but understand it can now be bought locally.

Side A of the program disk boots and loads the program into memory and begins an animated introduction with sound. The main program is on Side B. Once your investigative name has been entered into the Crime Computer you are given a case to solve. (Unfortunately there is no provision for a back-up copy to be made.)

User's manual

The user's manual is a 16-page booklet which introduces the budding detective to the program, explaining the objectives, key words, controls and hints. It includes an Interpol map which shows the 30 cities around the world where a thief could be hiding. Profiles of these thieves (all are members of the V.I.L.E. organisation of which Carmen is the leader) are in the police dossiers at the back of the manual.

A current edition of *The World Almanac* is enclosed. It is a type of yearbook of the world, with thousands of facts and information on an endless array of subjects, only a few of which are relevant to this program.

Classroom use

I have been using this program with standard three and four children for the past two years. With a class of about 26 the children organised themselves into groups of about three or four and chose a detecting name. Each group needed to have at least one good reader, as some of the text is difficult. They then became familiar with the criminal dossiers (put on the wall) and the game procedure. A timetable was drawn up in which each group was allocated 30

WHERE IN THE WORLD IS CARMEN SANDIEGO?

Investigations Sheet

Name:

Rank:

Date:

Case No:

Geography Clues

- | | |
|------------|----------------------|
| 1 | 4 |
| | |
| | |
| | |
| Place..... | Place..... |
| 2 | 5 |
| | |
| | |
| | |
| Place..... | Place..... |
| 3 | <u>Suspect Clues</u> |
| | Sex..... |
| | Hobby..... |
| | Hair..... |
| Place..... | Feature..... |

Auto.....
Suspect =

minutes once a week in which to solve as many cases as possible. Usually two or three groups used the program each day.

The almanac proved too difficult for many to use, and as only a small part of it was relevant (countries and flags) we compiled our own *Gazetteer of the World*. The gazetteer included a summary of each of the 30 countries shown on the Interpol map, and was written for 9-10 year olds. In addition, flags of the countries of the world and maps were included, and to complement these files a set of school encyclopedias, a good dictionary and a class atlas were on hand.

As the game became part of the class routine, different skills were introduced and taught. Skim reading, using a cross-index, collecting and organising data, decision-making as part of a team, and the ability to follow instructions became more relevant when used in a practical and fun way. To help children collect and collate data, a data sheet was drawn up.

On a case

This is how a typical investigation would go:

1. Sign in.
2. Assignment is given - one of 10 suspects has stolen a valuable

treasure from one of the 30 cities shown on the map.

3. Starting at the scene of the crime, four options on the main menu help you track down the suspect: See Connections
Depart by Plane
Investigate
Visit Interpol
4. Investigate and try to unearth some clue about where the suspect may have gone. There are two types of clues: suspect and geography clues.
5. See Connections and find all possible destinations reached by connecting flights.
6. Depart by Plane and take off after the suspect. Your travel route is shown on a little map at the side of the screen. On arriving in a new city, the day and time are displayed along with a brief description and picture (colour) of that city.
7. Investigate: you are given a choice of three possible places where the thief may have visited. Once a number of personal clues have been gathered, Visit Interpol and enter your clues on the crime computer. If the clues entered match the characteristics of a thief then an arrest warrant is issued. This is needed to successfully complete a case.

Once the above process has been repeated several times, various little animated characters will have made their way across the screen indicating that you're on the scent. After cornering the suspect in his or her hideout be careful, as knives and bullets start flying. Eventually the suspect will be marched off to jail if the correct arrest warrant has been issued.

Unfortunately time sometimes runs out and the criminal escapes. This could be the result of poor investigating and following wrong leads.

Any success is noted on the Crime Computer. The more cases you solve the higher you rate as a detective and the less time you are given to solve a case. There are five levels of detective and it takes about 12 successful cases to reach the top level.

As with most simulated adventure games, most of the action takes place away from the screen. The more successful detecting teams spend time researching and use the computer only after careful thought.

This game complemented my Social Studies programme and provided a source of real motivation to complete not just Social Studies but also other work smartly.

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\$110

Software piracy (continued)

Dear Sir,

We received with concern the article by "The Bear", Rotorua, on Software Piracy.

Regarding Ashton-Tate's dBase III Plus the facts are as follows:

Recommended Retail Price in the USA is \$695.00 while the New Zealand RRP, converted at \$NZ1.00-\$US0.52, is \$1336.000. This price does not include freight or customs agents' charges.

Given that dBase III Plus can be bought in New Zealand for less than \$1,336.000, we fail to see how a case for unfair pricing can be substantiated. It is true that aggressive discounters in the United States do sell dBase III Plus for less than \$US695.00, but one must appreciate that the vast size of the US market enables warehouse distributors to operate on slim margins with Ashton-Tate USA picking up the support.

In New Zealand, Ashton-Tate (NZ) Ltd support all products by telephone and/or visit, at no charge.

We endeavour to adjust our prices downwards with the change in exchange rates over a period. We cannot do this on a weekly basis because it simply is not practical. It might be three months between placing an order in the USA and being paid in New Zealand. Because the exchange rate is now consistently higher than \$0.52 as quoted by "The Bear", our dBase III Plus RRP is now \$1,295.00, not the \$1,440.00 quoted.

That being said, we agree that some software importers appear to have strange conversion formulas. All we can suggest here is that "The Bear" and other concerned persons always buy Ashton-Tate products, where possible, to ensure that they receive fair pricing and good support.

Kerry Baillie,

*Manager,
Ashton-Tate (NZ) Ltd,
Hamilton*

Dear Sir,

I fully agree with all the comments made by "The Bear", and have been aware of this problem/situation for many months.

The problem, at source, is due to the large number of 'exclusive' distributors in New Zealand, a much sought-after status in the distributor environment. As a result they are in a position to be able to, and therefore

do, take large profits because dealers have no other source for these product purchases.

Finally, I would point out, that MoS' gross margins are often as low as 8 per cent, therefore bringing reasonable prices to the marketplace; we work on high turnover and low margins.

Tim Manning,

*Managing Director,
MoS Computer Software & Supplies*

Dear Sir,

Thanks for the opportunity to respond to your Rotorua correspondent's letter.

Pricing on software in New Zealand is established by the distributor, based on recommended retail prices in the USA. These recommended retail prices are justified if the distributor and retailer offer comprehen-

sive sales advice, demonstrations, installation and configuration support, familiarisation and training. For example, Lotus 1-2-3 retails for \$US495.000 in America, and \$NZ1,090.00 in New Zealand.

However, many purchasers feel they do not need this level of support and ask for discount pricing. This market is serviced by software retailers who will discount Lotus 1-2-3, for example, to as low as \$US300.00 in America, and \$NZ695.00 in New Zealand, but who offer limited support.

Despite this, imagineering still offers hotline telephone support and upgrades to all users of our software.

Using pirated copies of software amounts to theft, and should not be tolerated by anyone.

Richard Dyson,

*Lotus Division Manager,
Imagineering Micro Distributors Ltd,
Auckland.*

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User defined characters

by Bryce utting

Soft Sector readers may be aware of a program called Fonts which was listed in an early issue of that magazine – unfortunately not available in this country (as far as I know). This month I will describe a program which works in a similar way, producing the same thing – user defined characters.

Program 1 is a listing that can be merged with other programs to provide comprehensive manipulation of character sets. Depending on memory, up to 32 different character sets (including the standard one in ROM) can be sorted in memory at any one time. Unfortunately as soon as BASIC is left, the character sets are not protected in any way and may be overwritten by a new program (eg. WordStar).

I have designed the program so that it is fairly easy to use and merge with other programs. It can be renumbered so that it fits anywhere within your own programs, with the exception of line 10. This sets aside memory for the new character sets and should always be the first line of the program.

To use it, put line 10 at the start of your program. The two 5s in this line determine how many character sets can be used (not counting ROM) and should be changed to suit your needs. The next thing your program should do is GOSUB 60000 to initialise the machine code subroutine. What this does is copy the ROM character into

RAM. It can be used with a small loop like:

```
FOR CHARSET = 1 TO MAXSET
  GOSUB 61000
NEXT
```

or more simply by:

```
CHARSET = (set number to initialise)
GOSUB 61000
```

Once the character set is in RAM, it can be altered. This is done by POKEing in new data, and needs a basic understanding of how characters are stored in memory. Put simply, each row of a character is taken as an 8 digit binary number and the decimal equivalents are added. Figure 1 shows an example. Note that the small numbers down the side are worked out by adding the small numbers on the top for each box where the pixel is on (for example, row 0 is equivalent to 01011010, which equals $64+16+8+2=90$).

To find the address of a character, multiply the set number by 2048 and add 8 times the ASCII number of the character, so a capital A in character set 2 is at $2*2048+8*65$. To address a specific row, add 0 for the first row, 1 for the second etc (see lines 62000-62070 and 63000-63050).

To redefine a character, set a data line with the eight numbers for that character in it, execute a RESTORE <line number> so that the READ pointer is pointing at the data, set up CHARSET and CHARNUM as per lines 61997 and 61998, and GOSUB 62000. A single row can be redefined

```
99 ' Upside down
100 GOSUB 60000: DIM C(7)
110 CHARSET=1: GOSUB 61000: GOSUB 64000
120 FOR N=32 TO 127: PRINT CHR$(N); " "; IN
EXT N: PRINT
130 FOR C=32 TO 127: C1=2048+C*8
140 FOR N=0 TO 7: C(N)=PEEK(C1+N): NEXT N
150 FOR N=0 TO 7: POKE C1+7-N, C(N): NEXT N
160 NEXT C
170 FOR N=32 TO 127: PRINT CHR$(N); " "; IN
EXT N
```

```
99 ' Italics
100 GOSUB 60000
110 CHARSET=1: GOSUB 61000: GOSUB 64000
120 FOR N=32 TO 127: PRINT CHR$(N); " "; IN
EXT N: PRINT
130 FOR C=32 TO 127: C1=2048+C*8
140 POKE C1, PEEK(C1)/2: POKE C1+1, PEEK(C1+1)/2
150 POKE C1+5, (PEEK(C1+5)*2) AND 255: POKE C1+6, (PEEK(C1+6)*2) AND 255: POKE C1+7, (PEEK(C1+7)*2) AND 255
160 NEXT C
170 FOR N=32 TO 127: PRINT CHR$(N); " "; IN
EXT N
```

```
99 ' Underlined
100 GOSUB 60000
110 CHARSET=1: GOSUB 61000: GOSUB 64000
120 FOR N=32 TO 127: PRINT CHR$(N); " "; IN
EXT N: PRINT
130 FOR C=32 TO 127: C1=2048+C*8
140 POKE C1+7, 255
150 NEXT C
160 FOR N=32 TO 127: PRINT CHR$(N); " "; IN
EXT N
```

using a similar process and GOSUB 63000.

To use a new character set, use CHARSET to point to the set and GOSUB 64000. This routine has been designed to take CHARSET=0 as the ROM set and will then set pointers accordingly. Before returning to DOS, the ROM set should be set up in this method.

Program 1

```
10 CLEAR 128+(128*5): DEFINT A-Z: MAXSET=5
59989 END
59990 ' *****
59991 ' * User Defined Characters *
59992 ' *
59993 ' * B.S. Utting 1987 *
59994 ' *****
59995 '
59996 ' Poke M/C subroutine (to
59997 ' shift character set into
59998 ' RAM) into user's memory
59999 '
60000 RESTORE 60500: USERSEG=SEG: DEF SEG=
SEG(4)
60010 FOR CHARMCPTR=0 TO &H1E
60020 READ CHARX$: POKE CHARMCPTR, VAL("&H
"+CHARX$)
60030 NEXT
60040 DEF USR9(A%)=0
60050 DEF SEG=USERSEG
60060 RETURN
60494 '
60495 ' M/C to shift original
60496 ' character set into RAM
60497 '
60498 ' Use with "USR9(CSET)" - CSET
60499 ' is between 1 & 31 inclusive
60500 DATA 3c,02
60510 DATA 75,1a
60520 DATA 8b,07
60530 DATA b9,00,04
60540 DATA f7,e1
60550 DATA d1,e0
60560 DATA 8b,f8
60570 DATA be,00,00
```

```
60580 DATA 8c,c8
60590 DATA 8e,c0
60600 DATA b8,00,ff
60610 DATA 8e,d8
60620 DATA fc,f3
60630 DATA a5
60640 DATA cb
60996 '
60997 ' Reset character set so that
60998 ' it mirrors the set in ROM
60999 '
61000 IF CHARSET<1 OR CHARSET>MAXSET THE
N ERROR 5
61010 USERSEG=SEG: DEF SEG=SEG(4)
61020 CHARCALL=USR9(CHARSET)
61030 DEF SEG=USERSEG
61040 RETURN
61992 '
61993 ' Redefine a character in
61994 ' specified character set
61995 '
61996 ' READ ptr points to 8H data line
61997 ' CHARSET points to the char. set
61998 ' CHARNUM points to character
61999 '
62000 IF CHARSET<1 OR CHARSET>MAXSET OR
CHARNUM<0 OR CHARNUM>255 THEN ERROR 5
62010 USERSEG=SEG: DEF SEG=SEG(4)
62020 CHARPTR=CHARSET*2048+CHARNUM*8
62030 FOR CHARREADLOOP=0 TO 7
62040 READ CHARDATA: POKE CHARPTR+CHARREA
DLOOP, CHARDATA
62050 NEXT
62060 DEF SEG=USERSEG
62070 RETURN
62991 '
62992 ' Redefine a single row of char
```

```
62993 ' in specified character set
62994 '
62995 ' CHARSET points to the char. set
62996 ' CHARNUM points to character
62997 ' CHARROW points to row of char.
62998 ' CHARDATA contains new row data
62999 '
63000 IF CHARSET<1 OR CHARSET>MAXSET OR
CHARNUM<0 OR CHARNUM>255 OR CHARROW<0 OR
CHARROW>7 OR CHARDATA<0 OR CHARDATA>255
THEN ERROR 5
63010 USERSEG=SEG: DEF SEG=SEG(4)
63020 CHARPTR=CHARSET*2048+CHARNUM*8+CHA
RROW
63030 POKE CHARPTR, CHARDATA
63040 DEF SEG=USERSEG
63050 RETURN
63991 '
63992 ' Tell BIOS where the current
63993 ' character set is
63994 '
63995 ' CHARSET points to the character
63996 ' set which is to be used.
63997 ' CHARSET=0 is the ROM char. set
63998 '
63999 IF CHARSET<0 OR CHARSET>MAXSET THE
N ERROR 5
64000 USERSEG=SEG: DEF SEG=&H40
64010 CHARSEG=SEG(4)+128*CHARSET-256
64020 IF CHARSET=0 THEN CHARSEG=&HFF00
64030 POKE &H10A4, CHARSEG MOD 256
64040 POKE &H10A5, CHARSEG\256
64050 DEF SEG=USERSEG
64060 RETURN
```


Five easy steps

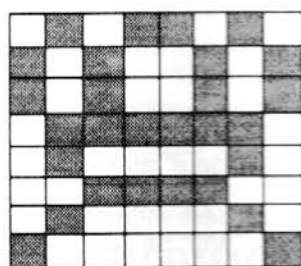
by Judy Knighton

```

prog      segment
          assume cs:prog
          org      0
          ;
charset proc far
          ;
          cmp      al,2      ; Argument type must be integer
          jnz      finish
          mov      ax,[bx]    ; Fetch argument
          mov      cx,400H    ; Length of block in words
          mov      dx,0
          shl      ax,1      ; AX := AX * 400H * 2
          mov      di,ax      ; = dest. offset
          mov      si,0      ; Source offset
          mov      ax,cs
          mov      es,ax      ; Dest. segment
          mov      ax,0FFF0H
          mov      ds,ax      ; Source segment
          cld                ; Direction = up
          rep      movsb      ; Copy by words
          ;
finish: ret
          ;
charset endp
          ;
prog      ends
          end

```

128 64 32 16 8 4 2 1
7 6 5 4 3 2 1 0



Row 0 = 90
Row 1 = 165
Row 2 = 165
Row 3 = 126
Row 4 = 66
Row 5 = 60
Row 6 = 66
Row 7 = 129

I have written three short programs which demonstrate how a character set can be altered using the data that already exists, creating italics, underlined and upside down (!) character sets. Note that these programs only alter the characters between ASCII 32 (space) and 127 (delete). This is easy to change.

The short assembler listing is the source code for the subroutine in Program 1. The only error trap in it is a test that the argument is an integer, so if you rewrite the routine at line 61000 be careful not to use an illegal character set number. Anything larger than MAXSET will spill over into video memory – not a pretty sight.

Please note two things:

- This will only work with PRINT, as SYMBOL bypasses DOS to print characters and will not recognise a new character set.
- DOS 1.25 users are left out in the cold (again!). The program works by resetting pointers that only exist in DOS 2.11. If I ever find the pointers in DOS 1.25, I will let you know.

By the time this is printed I should have finished a program that allows simpler editing of character sets, and possibly a new version that is protected from DOS. I will place these in the User Group's Public Domain library or you can get them directly from me. Write to 18 Fuchsia Ave, Hamilton, enclosing \$6 with a disk or \$10 without.

To hear its exponents, Desktop Publishing can do anything. It reminds me of a cartoon that did the rounds a while back – wild-eyed, bearded prophet in a sandwich board, little kid looking up at him. The board reads, "God is the answer". The kid asks, "What was the question?"

There is no complete desktop publishing answer to all printing and typesetting needs. Some programs handle one thing very well, others another. Make sure you know what your needs are before you shell out five figures.

Step One

Your first decision may be the operating environment. If you have to buy all new hardware, no problem. Decide which system is going to give you the best deal and buy that. This will mean looking closely at your needs, and trying for a best match with the products available.

Generally, though, an Apple system is easy to set up, and usually presents few learning difficulties. The argument against Apple is that current software has some limitations, and that the pool of software available is markedly smaller. Also, Apples have not in the past been expandable. If your needs changed, you had to change machines.

A lot of software has been written for IBM compatible machines. In addition, IBM compatible machines are usually readily expandable. As your needs grow, so can your machine. However, buying IBM is more complicated than picking up an Apple Macintosh and PageMaker. You don't just buy a machine. You have to buy all the bits – EGA card, printer, software, mouse – and make sure they all work together. If you don't feel competent to do this yourself, make sure you buy from someone who can show you the stuff working.

Maybe you already have Apple or MS/PC-DOS equipment. Even if you intend to buy a new system just for desktop publishing, it is a good idea to have all your machines compatible, for ease of transporting files.

Whatever, before you buy anything, look at Step Two.

Step Two

Hold everything.

Do you need a desktop publishing system?

What kind of documents do you want to print? Maybe you need to do reports, letters, the occasional memo. If almost all of your work is text, perhaps a top-line wordprocessor with a quality printer is all you need. If you do a lot of straight text printing, a laser printer is a good investment. They're fast, and no daisywheel can match them for print quality.

If your quantities are likely to be lower, why not send your finished, final copy on disk to a laser printing bureau? They charge on a per page basis, like a copy centre. In fact, most of them are also copy centres. If you need typeset quality occasionally, most bureaus can handle this as well, producing photoready copy of up to 2000 dots per inch.

If you need graphics in your documents – charts, graphs, pictures – again, look at the quantities you're putting out. Small quantities may be more economically handled through a bureau.

Remember, you don't just have the cost of the equipment. You also have to train staff to handle it, and pay them whether they are busy or not. (They won't be bored, though. They'll fill in their time prettying up invitations to tupperware parties, and letters home to Mum.)

If you still want your own desktop publishing department, continue to Step Three.

Step Three

Again, the question is, what do you want to produce?

If you have a limited output with an emphasis on graphics, a less costly product such as ClickArt or Dr Halo's Graphics (for the IBM) MacPaint or MacDraw (for the Apple) may be enough on their own.

If you need better quality, but still your documents are short (three pages or fewer) with graphics of greater importance than text, Pagemaker for IBM or Apple (with a good graphics program) may be your choice. For longer documents, with high quality text and good graphics handling, Ventura and Harvard Professional (for the IBM) and Ready-Set-Go (for the Apple) are the ones to look at.

For straight text, of the highest possible quality, my personal preference is for TEX which is available for both IBM and Apple. It is not easy to learn, but conforms to industry standard typesetting requirements. (The

typesetting industry, that is.)

As a general rule of thumb, the better the quality of the final output, the harder the program is to learn.

Step Four

Then there is hardware. If you are going the IBM way, get an AT. The software is horrendously slow on anything else, if it works at all.

For printers, PostScript has been accepted by IBM as a standard. What this means in effect is, if it doesn't talk PostScript, don't buy it. Even if they throw in a year's supply of paper and a free trip to Japan. (By the way, watch out for the NEC LED printer.

It's a neat tool now to use with a wordprocessor, and when they bring out the PostScript upgrade later this year, it is going to be great – two paper hoppers taking up to 500 pages, output paper sorted from beginning to end, not reversed, a page life of 300,000 copies. If only it handled Postscript now.)

Step Five

Now look at your other needs. If you already have accounting, file handling and other office administration software, you will have checked that your proposed desktop publishing system is going to be compatible with

them, so that you can pull graphs from your spreadsheet into a director's report, send a merge mail letter to every customer on your data base, etc.

If you don't have these kinds of software, look at what you might need, and think about compatibility.

Conclusion

Desktop Publishing is going to change the way we present the mountains of paper that get shuffled around the business world. Whether you choose to buy your own equipment or use a bureau, Desktop Publishing is for you. Enjoy.

DTP Users Group formed

DeskTop Publishing allows users to create professional looking documents such as manuals, magazines, forms, notices, newsletters and advertising material etc, on their computers. This exciting technology has come about through the recent arrival on the scene of several sophisticated page layout software packages, many of which have been reviewed in *Bits & Bytes* recently.

With the arrival of cheaper laser printers, DTP will quickly become very popular with any business, organisation or individual with a need for documents which have the appearance of being professionally prepared. For those unable to afford a laser printer it is now possible to hire them for use at your own premises, or even to go to a specialist shop where laser printers and DTP systems are available at an hourly rate.

By eliminating the need for expensive typesetting and tedious manual cutting and pasting, Desktop Publishing can often save both time and money. Whether you are a novice, a DTP user looking for improved methods, or just interested to see what DTP is all about, the DTP Users Group being formed within the NZ Microcomputer Club will be of value and relevance.

Some of the areas we hope to cover are:

- The creation of pages using page description languages, e.g. PostScript.
- Software and system options.
- Laser printing technology.
- Scanning and digitising equipment.
- Comparisons between the different page description languages.
- Alternative types of printers.

- Page layout techniques.
- Hints and tips.

We would welcome any further suggestions.

As soon as numbers increase to a suitable size we will be arranging regular meetings at the NZ Microcomputer Club Inc clubrooms each month. These meetings will aim to strike a happy balance between workshop sessions and visiting speakers, including experienced DTP users and commercial purveyors of systems printers and software.

All are welcome. To indicate your interest in the DeskTop Publishing Users Group, a group within the NZ Microcomputer Club Inc, P O Box 6210, Auckland, please call Selwyn Arrow on (09) 491-012 between 7 pm and 9 pm.

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MORE

an outliner

dented subheadings and so on. This gets your thoughts in order, and then you can race through and write the essay by joining up your list of headings. I can't say that I ever used the technique myself, but it sounded good.

This is exactly what MORE (and presumably any outliner) enables you to do. At its most basic it helps you to prepare hierarchical lists, just as my primary school teacher urged. However, it does it with all the advantages of word processing – it is easy to rearrange, expand and contract the list, so that you can get your train of thought exactly right.

Having organised your thoughts, you can print out the list or parts of it. The major headings come out in bold, and the subsidiary headings in plain text, so it's so easy to read and looks professional. MORE will also optionally number your headings for you (2, 2.1, 2.1.1 etc).

All this, while certainly useful, is hardly breathtaking. Where MORE comes into its own is in its other forms of presentation output. As well as simple lists, you can also print out your thoughts as tree diagrams or bullet charts, with various style options to choose from.

The tree chart capability is great for doing organisation charts, sports draw sheets and the like. The boxes can be round, rectangular, or none at all. The chart can be from top to bottom, left to right or right to left. Useful, but hardly earthshattering.

I suspect that the reason my university friend was so enthusiastic about MORE was the bullet chart feature. At the click of a button you can transform your entire list into a set of bullet charts, each with a heading and a set of main points (the subheadings in your list). Each level in your hierarchical list becomes a chart.

Why is this such a great feature? Well, here I can quote from experience. A couple of weeks ago I had a presentation to do for a client. This was a fairly important talk, so I

wanted to spend some time on it. We had just got MORE, so I used it to list out the major points of my presentation, rearrange them to get the flow right and so on. Then I displayed my outline as a set of bullet charts, and it was wondrous to behold – I realised that if I printed these off I would have a set of high quality overhead transparencies to use in my presentation.

And the whole exercise only took half an hour. It normally takes me at least two hours to prepare overheads that are primitive in comparison.

In my view it is this bullet chart feature in MORE which makes it useful. For anyone doing presentations (and that's teachers, lecturers, product and marketing managers and so on) it makes MORE essential – I only wish it had been available when I used to lecture at university!

One thing about MORE is that it is easy and intuitive to use. I feel a bit guilty writing about it because I haven't even looked at the manual. It is obvious that I have just scratched the surface with the package, as I can see that there are many other features that I haven't investigated (auto dial for communications, style templates, arithmetic operations and who knows what else).

MORE is good, but not perfect. I don't seem to be able to mix type fonts and styles, for example (and yes, I have just checked in the manual). This means that although I can have a different font or style applying to any one level in the document, I cannot italicise, underline or otherwise highlight one word within a piece of text.

I have written this entire article using MORE. I started off with a list of headings, expanded it, and then opened document (text) boxes to write the actual "guts" (if that is an appropriate term for such fine prose!). My old teacher would have been proud of me.

MORE is distributed by Imagineering and retails at \$730 (including GST). There are other outliners available, but not having seen them I can make no comparison (nor am I sure if they are available in New Zealand). Sidekick release 2.0 includes an outliner (as well as other goodies), and might well be more appropriate at \$250, and of course as previously mentioned there is a (not very intuitive) outliner in Microsoft Word 3 (\$1205.40).

I have had several enquiries about some of the previous articles I have written. If there are any points you want to have clarified or to take issue with I can be contacted at:

*Cowie Associates Ltd,
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A few weeks back I was talking to someone from Victoria University. Inevitably the conversation got around to computers and software, the advantages (or otherwise) of the Mac over the PC and so forth. In passing, he mentioned that I just had to have a look at a new product which he described as fantastic, called MORE.

MORE is an "outline processor". In my rambles through *MacWorld* magazine I had noticed the appearance of outliners, but had always doubted their usefulness. However, judging by the number of new outliners coming out, my scepticism is not shared by the user. Even Word 3 has a rudimentary outliner incorporated within it.

An outliner is basically a system which enables you to collect and arrange a list of thoughts. I can vaguely remember my teacher at primary school telling us how to write essays: first jot down the main points, then expand on these with subheadings which you list indented under the main points, then add further in-

Communications

More and more people are becoming involved with computer communications for both business and hobby reasons. Once you own a PC the only extras you need are a modem (cost from about \$300 upwards), communications software (some are available free from the Public Domain Software) and someone to call.

Locally most of the banks run a database like the ANZ's ANZTELL or BNZ's TELEDATA. These allow access to information such as sharemarkets, futures, money market, currency levels, personal banking information and many other regularly updated news.

Electronic mail services are also available allowing you to receive and leave messages for other users. These services are fast becoming a normal way of communications for many businesses.

But the uninitiated often fail to realise that there are many other bulletin boards (BBS) available for the hobbyist. For a small fee (usually around \$30.00 and some free) you have access to technical and practical advice, electronic mail, free public domain software and generally a new and, for some, compulsive way to use your spare time.

Most major cities have at least half-a-dozen of these BBSs operating. Your local microcomputer club should be able to tell you who they are and the phone numbers to call. If you have a modem already and would like to

have a look at some BBS (you can contact them and use a few of the services before paying your fee), three of the Auckland-based ones are:

NZ Microcomputer Club 644-068
Compu-Board 886-750
ABUG 5348-414

The new Microlab

After more than 18 months as manager of MicroLab we are sorry to say farewell to Phil Ashton. He is moving on to put his hand to marketing for Intech Software. Best of luck, Phil!

The new MicroLab team consists of three people.

Geoff Storey has joined MicroLab as a consultant. He qualified as a chartered accountant in South Africa in 1975, while post qualifying experience includes three years in commerce in financial/administration roles. From 1980 Geoff was a partner in a small accounting practice based in Johannesburg, providing business services to small and medium sized clients. Such services included assisting clients with microcomputer recommendations and installation.

Geoff has been in New Zealand for a year and, having familiarised himself with products on the local market, is now in a position to provide sound advice.

Steven Gordon is based at the

Cooopers & Lybrand Manukau office but is also working as a consultant for MicroLab. Steve joined Coopers & Lybrand in 1984 after returning from the UK where he managed DP installations. He worked for C&L's national computer team installing internal administration systems until last year when he became manager of the Microcomputer Division at Manukau.

Jenny Peacocke has been involved with microcomputers since 1979 on both the selling and training sides. She has an extensive knowledge of business software and is familiar with most popular productivity tools (spreadsheets, wordprocessing, data bases etc).

Jenny handles the software installation and support side of MicroLab.

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Problems of communication

by Pip Forer

It is good to be back with a BBC column after a couple of months' lapse. Blame a fascination with the Domesday system for that: too much technical work which (as yet) would directly interest too few people to put in this column. Anyway, this month's column owes its origins to the receipt of a modem which I now have linked into Starnet, Telecom's electronic mail facility. A lot of people have asked me about telecomms on the Beeb and I have had to plead ignorance. In the hope that it may help some, however, here is a record of my progress out of the dark.

You may of course be a sceptic and ask why telecomms are of value. If you are in this class, then before you close the page consider two areas: electronic mail (E-Mail); and access to remote databases.

The latter is less important than it might be. Most people in education (incredibly in an information age) do not have a budget for access to remote databases, so their widespread use in schools may be conditioned by constraints such as these (and in any case the mountains of many educational databases may come to Mohammed via CD-ROM and solve that problem).

That leaves E-Mail, which allows written communication at a fraction of the cost and many times the speed of air mail. It is very useful for administration, research and sharing resources, and quite a few schools have found it useful for having overseas penpals.

A more ambitious US development called Kidsnet (sponsored by National Geographic) uses telecomms for conducting global experiments in schools. For instance one unit is on acid rain. Each school does field work on its own area's rain acidity, but can then use E-Mail to get a broader picture across the nation by contacting participating schools in different regions of the country (or globe). E-Mail is central to this concept.

So what do you need to E-Mail? If we take the simplest example we can work through what is necessary to get a BBC sending messages under Telecom's Starnet system.

Firstly, you need a modem and a data plug on your phone. This will cost about \$400 all up and allows you to physically connect to the phone lines. However, at that stage you are all dressed up and with nowhere to go. To talk to someone you need a system at the other end of the line

waiting to hear from you, and usually you have to be registered as a user on this system. This is the case with Starnet, which is basically a computer that offers facilities to allow you to send messages between various registered users.

So you need to register with whatever systems you want to use. When all of this is completed you are ready to communicate. This is where the BBC comes in. It must talk to the modem through its serial port, and the modem must talk to the remote system along the telephone lines.

The modem uses standard RS-232 serial communications protocols. Any systems trying to communicate require agreement on two key pieces of information. One is the data transfer speed and the other is the format of the data. This format usually indicates how many bits of information come down the line before any stop bit(s), how many stop bits there are and whether a parity bit is set.

It is very important to set these figures right since communication is otherwise impossible. In many cases this involves several operations. The modem itself has to be set to an appropriate speed, which is defined by the database you are accessing, and which may be different for incoming messages as outgoing ones. Starnet offers three options for this: 300/300, 1200/1200 and 1200/75 baud (first number is transmit speed, the second is receive). You telephone different numbers for different speed options.

The modem does not usually have anything in it dealing with format. However, the BBC must provide the right format for the database and be on the right speed. Setting the speed on the modem is not sufficient to ensure this. You therefore have to set the BBC serial port to the right settings. This is a bit arcane on the model B, but simpler on the Master using *CONFIGURE DATA and *CONFIGURE BAUD. For Starnet the parameters are 5 and 3 respectively on 300/300 lines.

Once you have this set up then you can start communications. You now confront two issues, one of which is charging. Basically it costs more the longer you are on the lines. Typically you will want to log on to the system, receive any new mail and send your own messages. If you are a one finger typist this can be costly in connection time. Therefore a good strategy is to grab your mail and put it on to disk where you can scan it at leisure on a

word processor. Equally one prepares letters with VIEW before logging on and then spools them off from disk when needed.

The second issue is more profound. What programs will handle the incoming and outgoing operations? Some code needs to be there to handle this and to check the validity of messages.

Two obvious options exist. One is to buy a special communications package such as Comstar2, which does all of the handling and much else besides. The other, if you have a Master and no budget, is to use TERMINAL on the Master. Given my department's funding, this second option will be explored, and we will hopefully return to Comstar at a later date. TERMINAL can be used effectively to log on to Starnet, interact with the BBC and use the disk system to speed dispatch and reception of messages. Just how to do that is considered next month.

(Continued from p.57)

few references to substantive New Zealand work in the text, but you will find many, many ideas relevant to New Zealand.

All of these items stir the mind, and the last two really open substantial vistas. The CERI report in particular, while emanating from a continent keen to promote the technology it makes, is by no means a simplistic plea for technology for technology's sake. It raises issues which, at some stage or another, we will all have to confront and some of which are not always apparent from a teaching perspective. At a time when education budgets may be under threat, and the rival demands on education are considerable, a knowledge of these issues is important.

If the real priority is to come to grips with these technologies to produce a more efficient and more effective education system – as the Beattie Report, Roger Douglas and Russell Marshall all seem to suggest – then consistent policy and resource provision are needed.

Two morals come out of these various books and articles. One is that one should question those who procrastinate. The other is to beware of those who might point to the front line but provide no guns.

Calling all BBS users

by Chris Draper

This column is dedicated to Bulletin Board Systems – BBS. Its aim is to aid the exchange of news, ideas and experiences in electronic communications. If you run a BBS and would like the service publicised, drop me a line.

With magazine lead times being what they are, I have had to write this, the second article, before you saw the first one. So while I wait for that flood of contributions, here is a rather mixed bag of interesting bits and pieces.

A debate on what the ideal BBS should and should not have is currently continuing on my Tauranga based BBS. here are some of the suggestions put forward so far:

- Fancy welcome screens and

games where they may be found easily.

- Ability to network with other BBSs and swap mail etc. This would save users toll calls and would make possible nationwide voting on any topic under debate.

I realise some BBSs have these features already, but has anyone else anything to add? Is anyone interested in helping put some of these ideas into code? Could we call it KIWINET? Stay tuned!

ably originating the call, and hence operate in originate mode. Figure one shows some of the CCITT standards and the frequencies used.

Most BBS systems are capable of using more than one standard. Therefore you may dial in on V21 (300 baud) or V23 (1200/75) or in some cases V22 (1200/1200), and the BBS will adjust itself to match.

DIAL – a nifty little program written by Stephen Jones, allows the CTL MD312 modem to dial phone num-

CCITT STANDARD	BAUD RATE (bps)	TRANSMIT FREQUENCY (hertz)		RECEIVE FREQUENCY (hertz)	
		Space	Mark	Space	Mark
V21 Orig.	300	1180	980	1850	1650
V21 Answer	300	1850	1650	1180	980
V23 Mode 1	600	1700	1300	1700	1300
V23 Mode 2	1200	2100	1300	2100	1300
V23 Back	75	450	390	450	390

Fig 1. Some signal frequencies used

menus look good, but if you're ringing on 300 baud from the back of beyond, it costs extra toll dollars! One word commands including 'help' may work better.

- An online database where sysops can store users' contributions e.g. classifying old magazine article references and peeks and pokes for

Modem settings and standards can be a bit confusing to new users and prospective buyers. As an example let us assume we are going to call a BBS that advertises it will answer the phone using the following settings:– 300 baud (CCITT V21) answer mode.

300 baud is the speed, or number of bits that we will receive or transmit in a second. The computers at both ends of the link must use the same baud rate. When data is transmitted over phone lines, it is converted into tones. This is the modem's job. A binary 0, (or 'space') is represented by one tone, while a binary 1, (or 'mark') is represented by another. A further two tones are used for the received data. The frequencies of these four tones must adhere to some standard. The only legal in this country are the CCITT set of standards. Each of these standards specifies the speed and tones used.

Clearly there must be some agreement between both ends as to who sends which pair of tones. Therefore one is set up in 'Originate' mode while the other is in 'Answer' mode. When calling a BBS users are invari-

bers for you. The program is written for MS-DOS, but the principle could easily be implemented on any machine.

The MD313 modem has an internal relay controlled by the RS232 data terminal ready (DTR) signal. This relay is used to connect/disconnect the modem from the phone line. By simply pulsing the DTR signal, the relay effectively pulse dials the phone number requested. If you intend trying this, remember that this country has backward numbers, i.e. '1' is 9 pulses and '9' is 1 pulse. Oh, and remember to pulse from the 'off hook' position, otherwise you will hang up the phone immediately after dialling!

As you read this my wife and I are shifting to the big smoke over yonder Bombay Hills. The BBS I set up in Tauranga hopefully will continue operation but I would like to set up a new system in Auckland so watch this space! Meantime, if you wish to write (how antiquated!), please drop a line care of *Bits & Bytes* magazine.

This column is here to promote YOUR views on this exciting aspect of computing. If you find something hard to understand then write!

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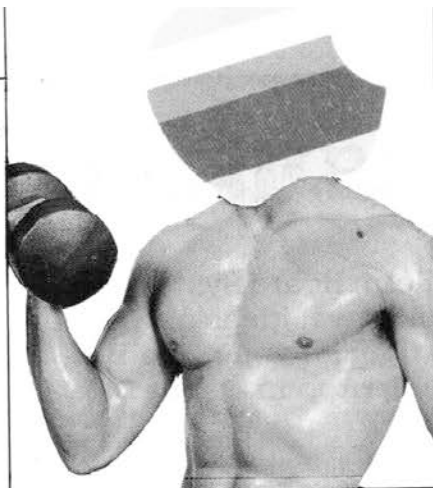
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Expanding your Apple II

by John MacGibbon



Over the last couple of years or so, substantial improvements in the performance of Apple II computers have become available. The end result has been a system which is more than adequate for many office functions, particularly in desktop publishing, where the Apple II can now be easily combined with the Macintosh and LaserWriter.

All this has become possible through the combined effects of Apple's new ProDOS operating system, the development and continuing success of the AppleWorks program, the production of new RAM cards and associated software, and the availability of 800kb, 3.5-inch disks for the Apple II. ProDOS allowed new programs to take practical advantage of extra RAM, while AppleWorks was the ProDOS program that took off and made broader RAMcard and software developments economic.

I've used expanded Apple IIs in different ways and under different circumstances. This article describes the pleasures and pitfalls encountered along the way.

The office system

We are using three Apple IIs in an in-house company corporate communications department. The computers are used mainly for word processing, but also for database and spreadsheet work. AppleWorks is used almost exclusively.

As well as the Apple IIs we have a Macintosh and LaserWriter for desktop publishing.

Why use the IIc, rather than the IIe? Because the portable IIc takes up less desk space, and the CPU, which contains the keyboard, is small enough to be pushed out of the way when it's time to shuffle paper.

Eighteen months ago, we decided to get a 512kb RAM expansion card, for two main reasons: to speed up AppleWorks, and to allow database files larger than 55kb. The card we actually imported, direct from the manufacturers in Texas, was a Z-RAM. We've since bought newer one-megabyte Z-RAM Ultra cards, with built-in clocks. Installing the card was

no great problem, though opening the IIc was much trickier than the manufacturer advertised.

We modified AppleWorks very easily, using patching software supplied with the card. This patch expands the AppleWorks desktop and increases the potential size of individual files. It also enables the whole of AppleWorks to load into RAM, the advantage of this feature being that AppleWorks no longer has to frequently refer back to the program disk to load program overlays. (AppleWorks is a large program, and it can't all load into normal RAM. It solves the problem by just loading parts of the program as the need arises.)

As Applied Engineering had promised, Z-RAM made a dramatic difference to the speed and convenience of using AppleWorks. This was particularly noticeable when both the size of files and the number of active files on the desktop increased. And being able to move so fast between the different functions of AppleWorks meant that it was practical to load a database file of media contacts every morning, and have it continuously on-line at the flick of an Apple-Q.

The card also gave us a printer buffer, which was a nice bonus.

The downside? Only that one had to wait for a minute and a half for AppleWorks to fully load from the disk. But in practice that was no problem in the office. You turned the thing on when you first arrived, and hardly noticed the thing booting while you shuffled paper or made a cup of coffee.

Pinpoint

With AppleWorks going like a train, the Z-RAM had easily justified itself. Then along came the Pinpoint desktop accessory system.

Pinpoint is a desktop accessory system similar to the IBM PC's Sidekick. It co-resides with AppleWorks, and allows one to temporarily suspend that program with Closed Apple-P, in order to use a calendar, appointment diary, calculator and several other things varying between fatuous frippery and frustrating frills. (Frustrat-

ing, because some require an auto-dial modem, which I can't afford. If I had one, Pinpoint would let me telecommunicate very conveniently. It would even dial phone numbers from my database.)

Pinpoint works much better with a RAM card. Without that facility it's hardly worth the effort, because of all the disk loading and swapping that is needed. Pinpoint's configuration software modifies the AppleWorks boot disk so that, on power-up, the system will automatically seek those desktop accessories one wants to use.

It is worth noting that it is Apple's (fairly) new ProDOS operating system that makes this configuration possible. Without ProDOS, there'd be no Pinpoint. (Or nothing worth using.)

The only Pinpoint accessory I use a lot is the calendar/appointment diary. It is marvellous: justification in itself for the program. Hit Closed Apple-P/Return, and I'm straight into a calendar for the next three months. Today will be highlighted, and when I press Return, a window opens to show a list of appointments and things to do for the day. Also visible is a summary of appointments for the following two days.

I've become addicted to the calendar, and whenever I'm not actually working on the computer I keep the calendar window open, to give a continuous reminder of appointments and things to do.

The calculator pops up like that on the Macintosh, but suffers from the lack of dedicated mathematical function keys. It's painful to have to use the shift key for adding and multiplying, and I use the calculator only when my steam powered desk model is irretrievably lost under piles of bumph. (The paperless office may be coming, but right now its imminence is equal to the paperless toilet...)

Pinpoint subsequently released a spelling checker. We bought that too, tantalised by the prospect of having it on-line. Unfortunately the idea is better than its execution. The checker is simple and convenient to use, and displays remarkable intelligence* if you ask it to suggest correct spellings for words it doesn't like. Unfortunately it is excruciatingly slow.

AppleWorks takes even longer to power up, but again, no problem in an office situation. However, I wouldn't consider Pinpoint for my home system, where I don't have the same need for the program's features.

Another problem is that the calendar/appointments system, being held in the computer's RAM, is volatile. So every night I power down the computer, I have to quit AppleWorks and copy the appointments file, from the RAM disk, to the power-up disk. I use the utilities portion of Copy II Plus (version 7.2), which is among the files

that automatically loads into RAM when I power up in the morning.

Again, all this jiggery-pokery is achieved through the magic of ProDOS. It sounds complicated, but it's only tricky at the configuration stage. Once configured, the daily operation is simple.

Boosting disk capacity

RAM expansion is not the only way we've boosted the capacity of our little IIs. We've also bought a couple of Disk 3.5-inch drives. Virtually identical to Apple Macintosh drives, they hold 800kb of data. While the extra storage capacity is nice, the main reason we bought the drives was to allow easier transfer of data to our Mac Plus, and thence to the LaserWriter.

Previously we transferred files serially via a cable. That was quite a performance, and only worthwhile when one had a lot of material to convert. Now we put the AppleWorks disk in the Mac's external drive, and use a utility program to convert files to the Mac format (and vice-versa). It's convenient, and very fast: this article was transferred in five seconds.

This set-up gives us the best of both worlds: we can hack out text on a cheapo Apple II, and then do final editing, page layout and laser printing on the Mac. The more expensive Macintosh doesn't get tied up with text entry, and anyway, we prefer Apple IIs, with AppleWorks, as basic writing machines.

To return to the Disk 3.5s: they are easy to use. The old 5.25-inch external drives daisy-chain off the rear, and AppleWorks lets you easily move data among them. Apple II machines can also use the new disk drives. In fact, a IIe can do any of the things described in this article, the only difference being that a separate RAMcard is required. Several are advertised in overseas magazines like A+, and Apple's own card is available locally.

Considering that second-hand IIs are available now at bargain prices, they would be a very cost-efficient way of providing more terminals in offices dedicated to writing and desktop publishing tasks.

The home system

Much and all as I appreciated the benefits of expanded RAM in the office, I was in no hurry to expand my home Apple IIe. Waiting for AppleWorks program overlays to load can be a pain, to be sure, but the memory limits imposed by a 128kb machine had never worried me, and my home files were easily accommodated. (After all, this article is pretty

long - 2000 words - yet it only takes up 13kb). Whenever I contemplated the landed price of about \$550, I would decide AppleWorks' limitations were perfectly acceptable.

Of course there was always an answer to slow loading of AppleWorks. It involved setting up the RAM card as a RAMdisk, and putting AppleWorks permanently in memory.

Unfortunately, the contents of RAMdisks evaporate into the ether as soon as one turns the power off, so to make such a system work efficiently, it would be necessary to leave the computer permanently switched on. That seemed rather extreme, and anyway, with several kids also using the machine, chances were it would get turned off at least once a day.

But eventually we bought a RAM card for our home computer. Why the change of heart? It was the release of Applied Engineering's new card, RamFactor.

What sold RamFactor was its battery back-up option, called RamCharger. This means the RamFactor card now gets its power from the mains-powered RamCharger instead of from the computer motherboard, so when the computer is turned off, all programs loaded on the RAMdisk are retained. To guard against power cuts, the RamCharger contains a nicad battery that will continue to power a one megabyte RamFactor card for up to five hours.

Now my AppleWorks is up and running, in fully loaded "fast" mode, within five seconds of turning the computer on.

But that's not all. I can access several data files that are resident on the 1024kb RAMdisk. I can Quit from AppleWorks and move, courtesy of ProDOS, straight into Copy II Plus or Pinpoint's new and very fast Document Checker. Or into my communications programs: Vidterm II for videotex, and Point to Point for talking to bulletin boards or transferring files to editors.

Or I can move to the DOS 3.3 partition on the RAMdisk and play Choplifter. I could even set up a Pascal 1.3 or CP/M partition if I wanted to.

Once you've used an Apple II in this way, there's no going back to the standard system. It really is a big improvement. But was it worth \$900 all up? I think it was. My wife is less sure, but then she doesn't use the computer much.

As to the future, I have a sneaky feeling the Apple IIGS will feature somewhere. So will my RamFactor. Unlike competing cards such as RamWorks, which require a IIe auxiliary slot, my card can be used in the IIGS, once again as a super-fast RAMdisk.

* On the other hand, when presented with Taranaki, it suggested tarantula!

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BASIC timing routines

by James Lawry

One of Locomotive BASIC's most powerful facilities for the programmer is its ability to use interrupts to direct the flow of a BASIC program. Not many dialects of BASIC have this capability, and without it a programmer must resort to machine code (ugh!) to achieve the same results. (Of course, these interrupts are not confined to BASIC, and the Amstrad firmware has sophisticated event handling under machine code as well, but that's another story.)

These interrupts provide the AFTER and EVERY commands. The program line:

```
100 AFTER 50 GOSUB 1000
```

tells the computer to go to a subroutine at line 1000 after one second has elapsed. (The 50 means 50 fiftieths of a second.) If you want the computer to execute the subroutine every second, then it should be changed to

```
100 EVERY 50 GOSUB 1000
```

This works by using timers. Every 1/50th of a second, the computer stops whatever it is doing and does a few housekeeping tasks, such as scanning the keyboard for INKEY\$ values. The above BASIC line tells it to set up a timer with a value of 50, and to subtract one from the timer during each interrupt. When the timer gets to zero, it's time to call the subroutine.

The applications of this idea in games programming are obvious. You could make a new alien appear every two seconds, for example, or put a time limit on the game by making the player die after one minute, or whatever. If things get really complicated, you can have more than one EVERY statement active at one time, by putting a timer number after the time period, like this:

```
100 EVERY 20,0 GOSUB 1000
```

```
110 EVERY 200,1 GOSUB 2000
```

The timer number can range from 0 to 3. Timer 3 has highest priority, which means that if the computer is executing timer 3's routine, it is uninterrupted by any other timers if they should run out. Timer 2 has second priority, which means it can only be interrupted by timer 3; and so on down to timer 0, lowest priority. If you leave out the timer number, the computer assumes timer 0.

What if you want to stop these subroutines from so rudely interrupting your program? Two commands are provided: DI to disable the interrupts and EI to re-enable them. Place these commands around any routine you want to continue uninterrupted. If you want to stop one particular timer, use the REMAIN function:

```
100 r=REMAIN(n)
```

This line will stop timer number n

and r will contain the time left to run on it. (You don't have to use r; any variable will do.) Speaking of variables, it is a good idea to use different variables in these subroutines to those in your main program – if you are the same, then you must be sure that any intermediate state that the variable could have in between statements will not foul up the subroutine if it interrupts at that time.

These timers aren't just for games: they do have serious applications. One possibility is an on-screen clock. Amstrad computers do have a built-in clock which you can read from BASIC using the TIME function, but this isn't much use since it only gives the length of time since the computer was switched on. Also, it measures time in 300ths of a second! Not very helpful, really, if you want to know what time it is.

A simple solution using these interrupts is to have a subroutine updating the clock and have a line early in your program:

```
50 EVERY 50,3 GOSUB 40000
```

or wherever you keep your clock routine. Notice the use of timer 3. This means that the clock will keep good time even if your program uses other timers.

Of course, keeping the time is all very well, but you have to be able to read it on the screen somewhere. Why not use a window? The time can then be printed in the window, out of the way of any other output the program is producing. You must be careful not to let the whole screen scroll however, or your nice display will be ruined.

No clock is perfect, needless to say. This one still has to be set to the right time when you start. This is unavoidable.

This program is my attempt at put-

```
1 'Clock
2 'by J. Lawry
3 'This program is intended to be combined with your own
  programs using the MERGE command.
4 'Check that there are no common line numbers or variables
  and alter WINDOW, MODE and colour commands to suit.
10 MODE 1:CLS
20 GOSUB 30000 'initialize
30 EVERY 50,3 GOSUB 40000
40 'put program here
100 GOTO 100
30000 WINDOW #7,33,40,1,2
30010 WINDOW 1,40,3,25
30020 PAPER#7,1:PEN#7,0
30030 CLS#7
30040 PRINT#7,"Time?"
30045 'Following lines read time from keyboard. Only valid
  times are allowed and the DEL key is catered for.
30046 'NB: When entering the time you may need to type a
  colon or full stop to separate hours and minutes.
30050 clas=INKEY$:IF clas="" THEN 30050
30060 IF clas<"1" OR clas>"9" THEN 30050
30070 clhr=clas:PRINT#7,clhr:IF clhr>"1" THEN PRINT#7,";"
  :GOTO 30120
30080 clas=INKEY$:IF clas="" THEN 30080
30090 IF clas=CHR$(127) THEN PRINT#7,CHR$(8):CHR$(16):clhr$
  ="":GOTO 30050
30100 IF clas="" OR clas="." THEN PRINT#7,";":GOTO 30120
30110 IF clas>"1" AND clas<"2" THEN 30080 ELSE PRINT#7,
  clas:";":clhr$=clhr$+clas
30120 clas=INKEY$:IF clas="" THEN 30120
```

ting this idea into BASIC. It uses window #7 to keep the clock in, and the updating routine is from 40000 on. GOSUB 30000 initialises the clock, asking for the current time, and setting up the variables, etc. All the variables start with the letters 'cl' so it is unlikely your program will have any with the same names.

The clock updating routine can only be called at the end of whatever instruction is being executed by BASIC at the point when the interrupt is 'kicked' (to use the term of the Firmware Manual). This means that the clock will stop during an INPUT command. However, kicks during this time are remembered, and after you press ENTER and the INPUT command is finished, there will be a flurry of activity as the clock is updated. Disk and cassette commands are another problem: the computer turns off all interrupts while these are being processed, so kicks are irretrievably lost. In the case of disk commands, this will only be a few seconds, but tape commands could cause the clock to lose up to five minutes or more.

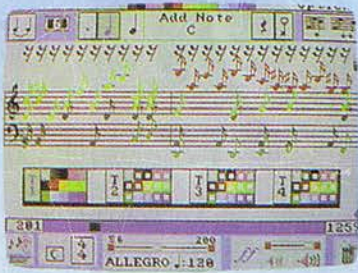
Obviously these interrupts stop when your BASIC program stops running, so you can't have the clock going while you program. (Well, not from BASIC anyway.) If you're really clever you can have a go at writing the clock in machine code as a ticker interrupt, which will keep going during INPUT and while you program.

Why not try changing it to an analogue clock, with graphic commands to draw the hands? Or what about a chess clock, as seen in computer chess programs? Write and tell me of any problems or successes you have. In fact, any correspondence would be gratefully received; address it to be C/- Bits & Bytes.

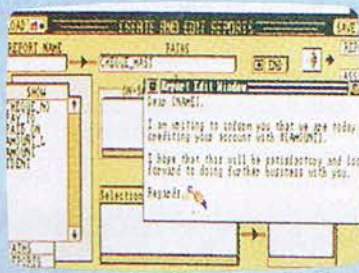
```
30130 IF clas=CHR$(127) THEN PRINT#7,CHR$(8):CHR$(16):CHR$(8)
  CHR$(16):IF LEN(clhr$)=1 THEN clhr$="":GOTO 30050
  ELSE clhr$=LEFT$(clhr$,1):GOTO 30080
30140 IF clas<"0" OR clas>"9" THEN 30120
30150 clmin$=clmin$+clas:PRINT#7,clmin$
30160 clas=INKEY$:IF clas="" THEN 30160
30170 IF clas=CHR$(127) THEN clmin$="":PRINT#7,CHR$(8);
  CHR$(16):GOTO 30120
30180 IF clas<"0" OR clas>"9" THEN 30160
30190 PRINT#7,clmin$:clmin$=clmin$+clas
30200 clas=INKEY$:IF clas="" THEN 30200
30210 IF clas=CHR$(127) THEN PRINT#7,CHR$(8):CHR$(16):clmin$
  =LEFT$(clmin$,1):GOTO 30160
30220 IF clas<"0" OR clas>"9" THEN 30200
30230 clsec$="00"
30240 DEF FNN$(n)=MID$(STR$(n),2)
30250 CLS#7:PRINT#7," TIME:"
30260 RETURN
39998 '*****
39999 'clock routine, called every second
40000 clsec$=FNN$(VAL(clsec$)+1)
40010 IF LEN(clsec$)=1 THEN clsec$="0"+clsec$
40020 IF clsec$="60" THEN clsec$="00":clmin$=FNN$(VAL(
  clmin$)+1)
40030 IF LEN(clmin$)=1 THEN clmin$="0"+clmin$
40040 IF clmin$="60" THEN clmin$="00":clhr$=FNN$(VAL(clhr$)
  +1)
40050 IF clhr$="13" THEN clhr$="1"
40060 IF LEN(clhr$)=1 THEN clhr$=" "+clhr$
40070 LOCATE#7,1,2:PRINT#7,clhr$:"clmin$:"clsec$;
40080 RETURN
```


When the work is done it's a whole lot of fun!

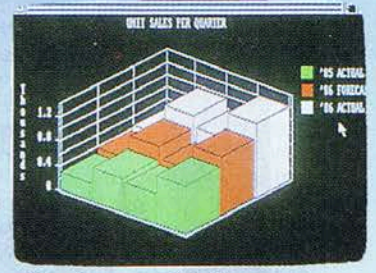
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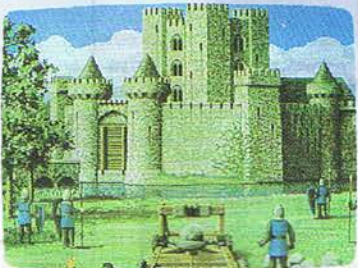
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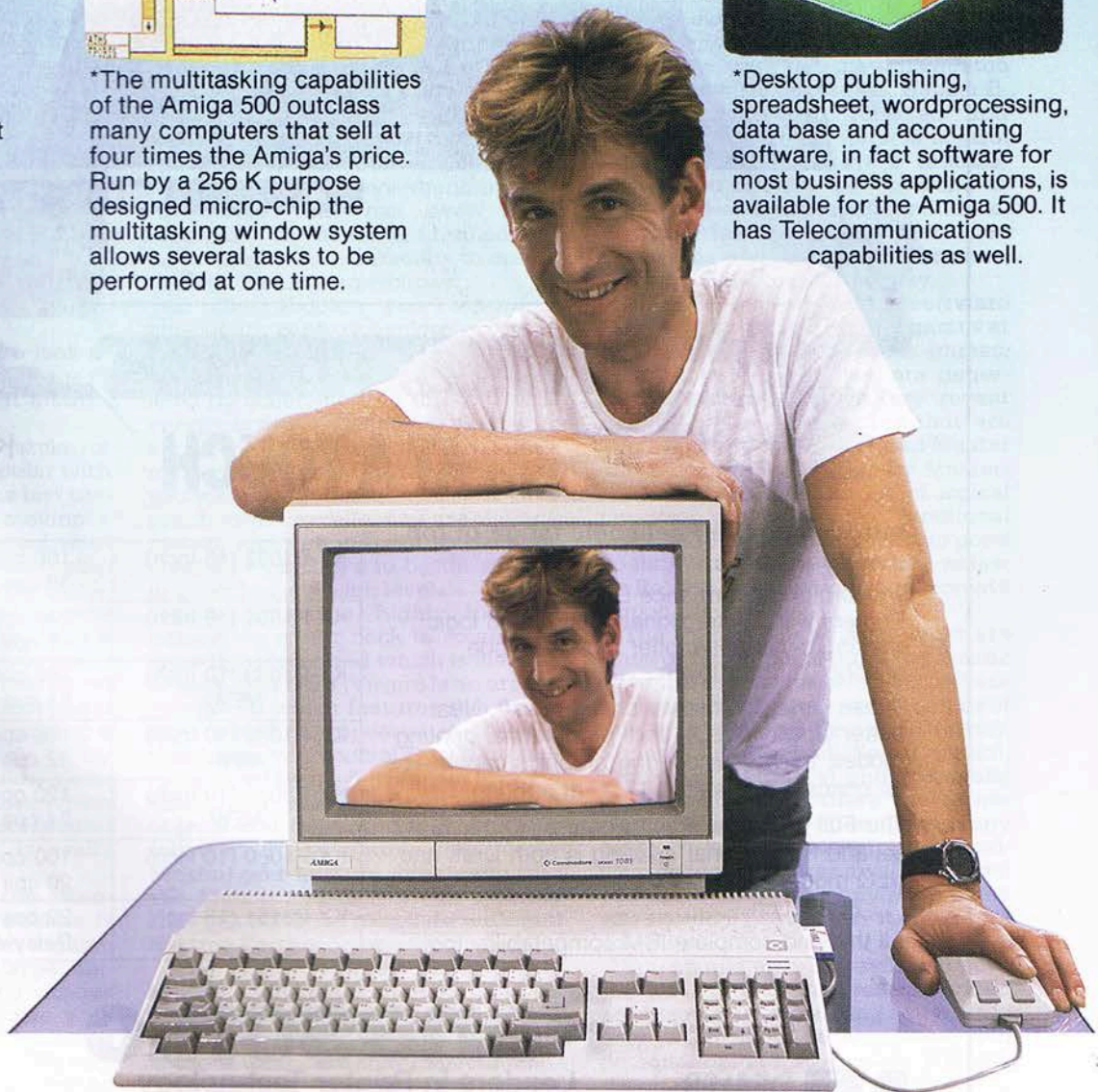
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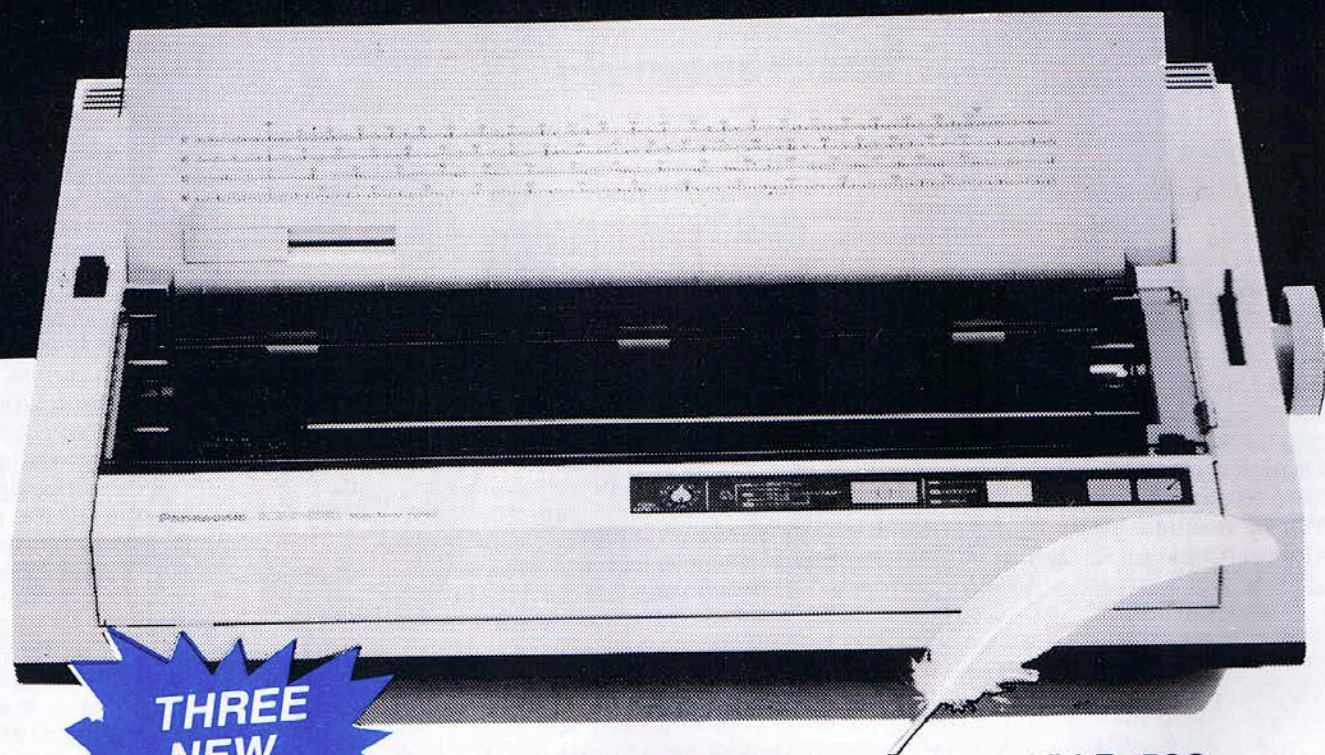
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Computer quests

by Timothy Howell

pany named Novagen introduced a game called *Mercenary* which surpassed *Elite* in many respects. The most impressive aspects of *Mercenary*, when first seen, are its detailed and fast moving 3D vector graphics. This game is much like *Elite* in the way that you fly a spaceship around a large area, explore places, collect objects etc. to complete your quest. Again, this is also a very addictive game and takes a long time to complete, but the excellent graphics and the challenging puzzles keep you going.

Activision/Lucasfilm (the same group who made *Star Wars*) released *The Eidolon* last year. This game is one of the most atmospheric arcade adventures that has ever been released. It uses a branch of mathematics called fractals to create realistic looking landscapes.

In *The Eidolon* you control a nineteenth century exploratory vehicle to explore seven different mazes and to destroy the guardian of each level by collecting and firing various energy crystals. Instead of the usual aerial view of mazes, such as in *Pacman*, you are actually in the cave and you view the game as such. The cave graphics are excellent as are the animation and definition of the various creatures you have to battle against in order to pass each level.

Now from the highly involved games we revert back to something more light-hearted which is also fun to play. *Dan Dare* (Virgin) is an arcade adventure which features this comic hero who first appeared in 1949. In this game you control *Dan Dare* (accompanied by his faithful pet *Stripey*) and by interacting with different objects and fighting the *Treens* (the followers of *Dan Dare's* arch-enemy *Mekon*) you have to eventually find the *Mekon* and destroy an asteroid that has been set to collide with and destroy Earth.

The game features cartoon-style graphics which are so good that you feel if you are taking part in a cartoon. Some of the graphical effects, such as using a torch, are quite spectacular. The puzzles involved are logical which help to make the game more enjoyable.

Cauldron, *Cauldron II* and *The Sacred Armour of Antiriad* (phew!) are three excellent arcade adventures which have been released over the last two years by Palace Software.

They all feature excellent graphics and sound effects as well as good puzzles. The first two are rather difficult arcade adventures in which you control a witch and pumpkin respectively (yes, a pumpkin). In both you have to explore many screens to find various tools to enable you to finish the games. In *Antiriad* you control a more regular human being. You have to put him in his protective armour and do the usual things to finish the game. The graphics in *Antiriad* are of a very high quality as are the sound effects and music.

An unusual arcade adventure which has also been released by Activision is *Hacker*. In this game you have gained access to a worldwide computer network and by using it you travel the world buying and selling valuable art objects etc. to get the pieces of a top secret document. Though it is an unusual game concept it is very enjoyable to play and not too difficult to solve. A sequel, *Hacker II*, has recently been released and involves using computers to control video cameras to locate a valuable article. You can also use the cameras to record incriminating evidence. *Hacker II* features quality animation sequences and, like its predecessor, is atmospheric and fun to play.

In the last year or so the software industry has put out budget games at a low price. Some of these games, though cheap pricewise, are generally of a high quality. Two recent budget arcade adventures that are very good are *Spellbound* and *Master of Magic*, both published by Mastertronic and featuring a lot of logical puzzles as well as functional graphics. They also feature two good quality soundtracks by music-maestro Rob Hubbard which help to create a good atmosphere.

The games I have mentioned are some of the cream of the many arcade adventures that are available. There are many other good quality games of this type such as *Heartland* (Odin), *Nodes* (and *Arc*) of *Yesod* (Odin), *Entombed* (Ultimate) and *Starquake* (Bubble Bus), but these are rather similar to previous offerings in many cases. There are also many poor quality arcade adventures available and if you are considering buying a game you should if possible try it out before you buy.

You should also, if possible, try out the games that I have recommended because liking or disliking software is very much dependent on your own personal opinion of a game and you may not like what I do.

This is intended only as a guide to the wide range of arcade adventures that are available for the Commodore 64. Next I hope to write about some of the type in command sort of adventures that are available. Happy arcade adventuring!



This month I would like to look at one of the two 'thinking' types of games that I mentioned last month: the arcade adventure.

The arcade adventure style of game has become quite popular with Commodore owners over the last two years. It usually involves moving a character around a vast number of screens, picking up objects and using them to get you further into the game. There is no real 'typical' arcade adventure, but if I had to pick out a game that was definitive I would say that the relatively primitive *Sabre Wulf* (Firebird) sparked off this type of game. *Sabre Wulf* involved moving a hunter around a large jungle to try and find pieces of an amulet. Compared with more recent games which feature much better graphics, sound and puzzles, *Sabre Wulf* is really simplistic.

A game that has taken the attention of many Commodore owners is *Elite* (Firebird). This massive game involves flying around a large universe, collecting and trading various commodities and trying to raise your status from 'harmless' to the much vaunted 'elite'. *Elite* features 3D vector graphics which help to add to the overall atmosphere that is convincingly rendered. It is a very involved game which, like many of its type, would take a long time to complete but would be still fun nevertheless.

About a year after *Elite* was released a relatively unknown com-



Championship Golf: The Great Courses of the World

An IBM PC game review by Shayne Doyle

As an occasional golfer, I am naturally intrigued by computer golf games, and always on the lookout for that better version. Championship Golf from Activision provides the best simulation I have seen on the PC to date. Apparently the first in a series of programs offering the great golf courses of America, Volume One features the Pebble Beach course on the Monterey Peninsula in California. The course is laid out on top of cliffs above the Pacific and consequently offers some most interesting challenges.

As may be expected from a software distributor such as Activision, presentation of the package is excellent. A 32-page booklet guides the player through the program, thoroughly explaining all the functions available and steps required to successfully complete a hole. Accompanying the booklet is a three-page foldout with a colour bird's-eye view of the course layout on one side, and a reprint of an article from the June 1982 issue of *Golf Digest*—a capsule review of playing the real course.

On starting the program, the full 18-hole scorecard is displayed, showing for each hole the handicap rating and yardages from back, middle, and

front tees. Up to four players may register to play. By using the cursor keys to highlight a hole, it is possible to begin play on any of the 18.

Pressing Enter displays the first hole selected. The default display is split, the right side showing a ground level golfer's perspective from the ball position, the left side an overhead view of the entire hole. Around the four corners of the left view are the current player's initials and stroke count, distance from the hole, hole number and par, wind speed and direction.

At this point a number of other viewing options are available. F1 expands the ground level perspective view to fill whole screen, F3 and F4 toggle the left display between a close-up and overall view, F5 and F6 toggle the right display between ground level and the same perspective view at a height of 100 feet. On the overhead views a small red square represents the player and a white dot represents both the ball and player's line of sight.

As the program always sets up the line of sight directly at the flag stick, keys F7 and F8 rotate the player around the ball, allowing the line of

sight to be changed. It is necessary to redraw the views after using these keys. In addition, the player can 'walk' around the course to plan a shot or gain a new perspective of the hole. Having decided on a suitable line of sight, the player moves on to three 'shot making' screens.

Club selection involves scrolling through a list of the clubs in the bag. As each club is highlighted the display shows a picture of the club head addressing the ball, the degree of loft, and maximum range. Pressing Enter confirms club selection and moves onto the next screen—stance and clubface alignment.

The left side of the screen is split again, showing club face alignment relative to the ball in the top portion, and feet alignment relative to line of sight in the lower section. The clubface can be opened or closed to put spin on the ball so that the shot will hook or slice. Stance can be opened or closed to slice or hook by moving the front foot forwards or backwards. As the foot moves, a large arrow in the top display adjusts to represent the change in the club's swing path.

The last shotmaking screen is where the player actually swings the club. The display is again split into two halves. The left side shows the player standing at the ball, the right side is split into a top and side view of the club head addressing the ball. This is where practice and skill really count, as the player has total control of the swing.

Pressing any key will start the swing and once under way it may be influenced by five other key combinations. 'C' adds wrist action by cocking the wrists on the backswing and releasing them on the downswing, and failure to do the latter can result in missing the ball completely and adding one to the player's 'whisky shot' total. Distance is added to the shot by breaking the wrists at the right moment during the swing—too early and distance is lost, too late and the ball may be 'topped'.

'B' adds body action, and as with wrist action, timing is crucial. The key has to be pressed the same number of times on the downswing as on the upswing, the body being uncoiled as the club passes through the power zone of the swing. Both wrist and body action may be combined by using the 'V' key. Arm speed during the swing is governed by repeatedly pressing any other key, with the top row of alpha keys adding even more speed than the others.

During the swing the two views of the club head and ball on the right side of the screen show the swing path and projected club loft angle, and are momentarily frozen at impact so the player can assess his timing in terms of ideal swing path, clubface direction, and angle of attack.

The first of these allows the selection of club and type of stroke desired. The program will always highlight a recommended club and stroke, which may be accepted or overridden. The three stroke choices are: full – involving body turn, arm speed, and wrist action; chip – half swing with shorter backswing and follow-through; and putt – arms and wrists only.

Immediately after impact the display switches to the split overhead and perspective views to show the flight of the ball. This is extremely realistic, with ball shadow, good bounce dynamics, and appropriate sound effects. Hitting into the trees is just as frustrating here as on the real course. There are also heaps of bunkers around Pebble Beach and it will take several shots to get out if you don't do it right!

Once at the green area, a good deal of skill is still required to sink the ball. All perspective views of the fairways and greens are overlaid with a grid pattern which gives yardages, and also indicates the slope of the terrain. This pattern is particularly important on the green, as it provides a reference to 'read' the green before putting. Again, ball movement is very realistic, curving away from the hole just when you think you are lined up correctly.

Championship Golf offers good practice facilities. Putting green, teeing ground, fairway, rough, and two bunkers are available for hours of dedicated practice sessions.

I was most impressed with the program, it is one of the best I have played and in my opinion one of the

few games around worth the asking price. My only criticism is that occasionally the colour combinations used make it a bit difficult to make out the detail on the display. Championship Golf sells at between \$99 and \$125.

Review copy courtesy of PC Power Ltd, Lower Hutt.

Trivial Pursuits

An Atari computer game review by Michael Fennessy

The computer version of Trivial Pursuits has the same rules as the board version and is played in the same way, but it has many extra features. The questions in the computer version are asked by a funny little man called T.P. who walks around the screen and 'talks'.

Questions asked by T.P. may be written (printed on the screen), audio or visual. In the audio questions T.P. turns on a cassette recorder on the screen and then asks a question relating to the music which has been played. A screen is pulled down in the visual questions and a picture or diagram appears on this screen. The question is then asked on something to do with the picture.

To answer a question a player says the answer out loud so the other

players can hear and then presses the joystick button. The answer appears in the question window and the other players judge whether the answer is correct or not.

The game keeps a record of the number of questions a player has been asked and the number he or she has answered correctly in a certain subject. There are also other special features such as the option of introducing new players to a game already in progress.

Overall, Trivial Pursuits is a well constructed game, with smooth graphics which are enhanced by the sound. It features 3,000 questions and it is possible to purchase extra questions on disk or cassette.

Game for review supplied by J.E. Cagney and Sons Ltd, Mosgiel.

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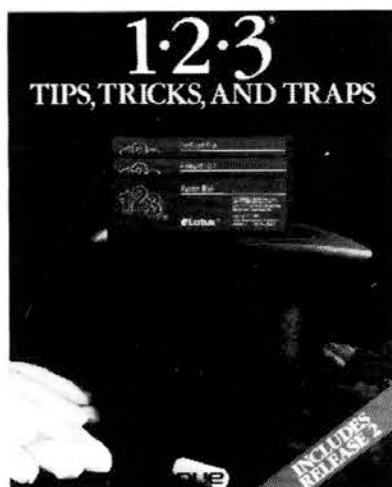
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Atari system variables

by James Palmer

System variables are memory locations hidden away deep inside your computer, used by your Atari to control many and varied functions. Normally they can be safely avoided, but their correct use will allow you to boldly go beyond normal Atari BASIC.

All of these memory locations can be thought of as a series of post boxes (but much smaller and quicker than the real kind). In some of them, the computer will be giving you a 'message' to read, while in others you can send it a 'message', telling the computer what to do. These communications are actually single numbers, ranging in value from 0 to 255. To look into a post box we use the command PEEK. Its syntax is:

`x = PEEK(addr)`

Where `addr` is the memory location you want to look at. `x` will now contain a value from 0 to 255.

To 'post' a message to the computer (electronic mail?), we use the POKE command, whose syntax is:

`POKE addr,x`

Once again `addr` is the memory location, and this time `x` is the value (0-255) you want to store at this location.

The following is a list of common useful memory locations inside your Atari.

9: RESET CONTROL

This location controls what happens when RESET is pressed. POKE 9,255 and pressing RESET will cause the computer to lock-up. This is very useful for protecting your own programs.

16: BREAK PROTECTION

Unfortunately this location will not make your computer indestructible, but what it will do is disable the BREAK key. To use it you must store the value 64 into both this location and into 53774, ie:

`POKE 16,64: POKE 53774,64`

77: ATTRACT MODE DISABLE

You will have probably discovered that if you leave your Atari alone for about seven or eight minutes the screen colours will begin to rotate randomly. This idea was first used on arcade machines to attract attention (hence the name), but on your Atari it is used to prevent possible damage to your television tube. If you want to turn off the attract mode (for instance

if you are using a joystick and not touching the keyboard), you must POKE 77,0 (to reset the timer) at least once every seven minutes. To turn on the attract mode POKE 77,128.

82: LEFT MARGIN

This sets the left margin column (for text) and is normally set at 2, but can hold any value between 0 and 39. It is useful to keep this to the left of the right margin.

83: RIGHT MARGIN

Normally set at 39, but may be between 0 and 39. Locations 82 and 83 can be effectively used to control the screen format. It is normal to keep the right margin to the right of the left margin.

84: CURSOR POSITION (ROW)

You can either POKE this location to control where the next print to the screen will occur, or PEEK it to find the current cursor position.

85: CURSOR POSITION (COLUMN)

Same use as location 84, except that this one controls the column.

195: ERROR CODE

PRINT PEEK (195) will display the error code of the last error. This is very useful in conjunction with the TRAP command, as you can find out what the actual error was.

201: PRINT TAB WIDTH

Controls the number of spaces between tabs, normally set to 10.

580: COLD START

POKE 580,1 will cause the computer to re-boot when RESET is pressed.

752: CURSOR OFF/ON

The cursor can be turned off by POKEing 752 with 1, and turned on by POKEing it with 0.

755: TEXT CONTROL

POKE 755,6 to totally confuse your Atari.

756: CHARACTER SET

This location tells the computer where to find the character set for displaying text onto your TV screen. It can be used either for custom character sets or to disrupt the display (eg. POKE 756,0).

764: KEY CODE

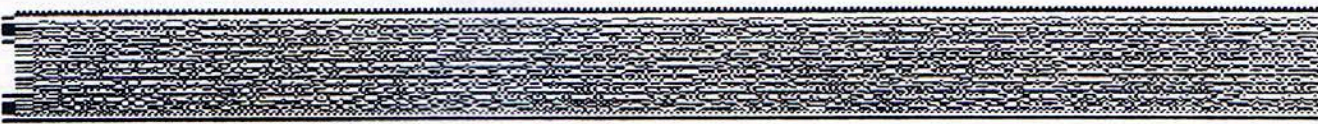
This location allows you to easily see if a key is being pressed on the keyboard. Try:

`10 PRINT PEEK(764): GOTO 10`

and press a few keys.

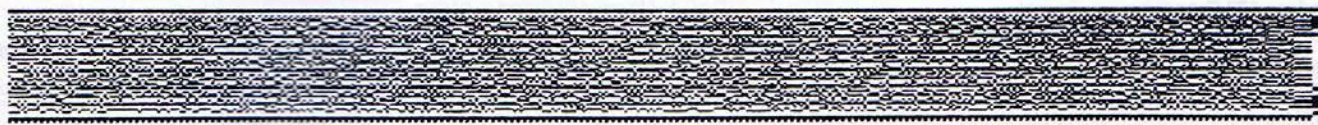
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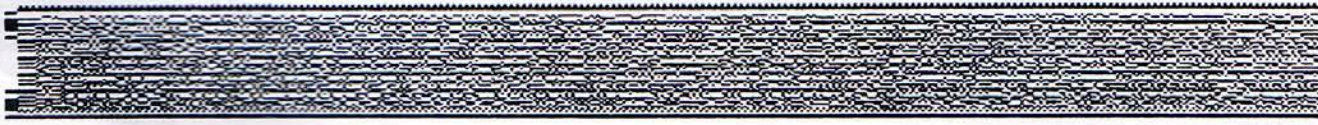


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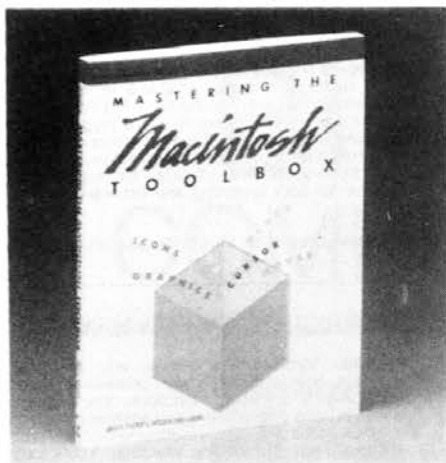
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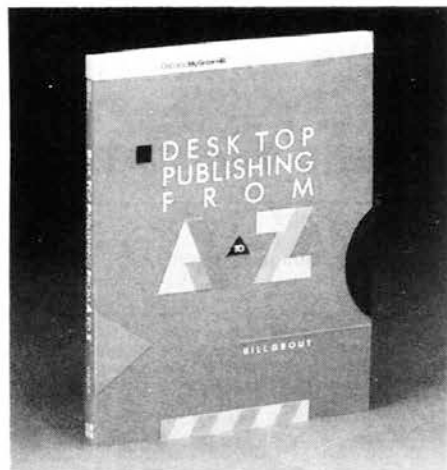
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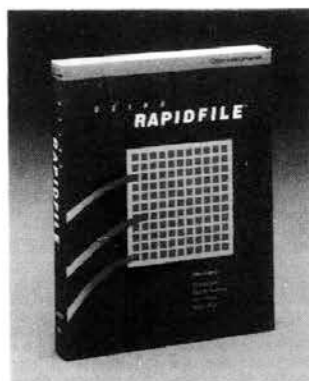
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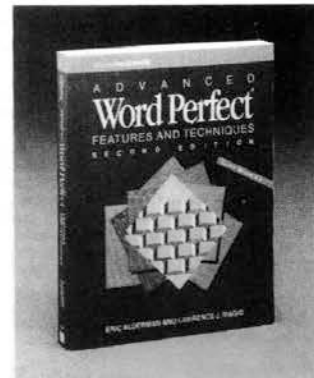
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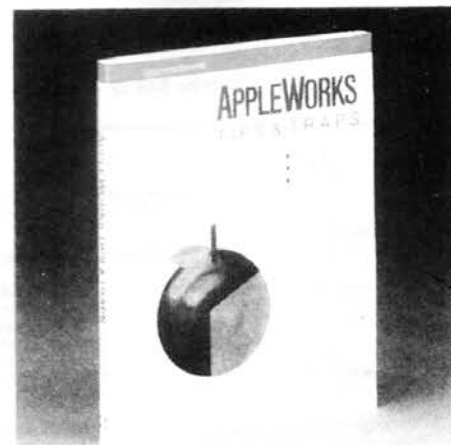
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Dottiness about directories

by Selwyn Arrow

We will start off this month with a closer look at directories and sub-directories, what they are and why we need them, and then we will answer the question you have most likely considered: why do '.' and '..' appear in DOS?

There are actually two types of disk directories: root directories and sub-directories. Both store their filenames and locations on your disks, but they differ in their characteristics.

The root directory has a fixed size and a maximum number of entries (dependent on DOS version) and it is stored on the disk in a fixed location. There is always one directory entry for each file on a disk, an entry for every subdirectory's files, plus one for that disk's volume ID label. Each of these entries takes up 32 bytes as it must store the file name, extension, attributes, time, date, location and size.

On single-sided disks, four sectors are made available for the entire file directory, and as each sector is 512 bytes that gives 16 entries per sector, providing for a total of 64 directories. On double-sided disks (DOS 2 onwards), seven sectors are available, which can hold 112 directory entries for the root directory.

For a hard disk, the number of root directory entries depends on the size of the disk and how much of it is allocated to DOS.

Subdirectories

From DOS 2 onwards, subdirectories became available, but their use is usually restricted to high capacity floppies and hard disks because each subdirectory does take up precious disk space. Subdirectories are always attached to a parent directory, usually the root directory. But of course you can have several levels of sub-directories forming a tree structure, with each subdirectory attached to the one above, until you get to the main or root directory.

Each of these subdirectories is stored and listed like a file by the root directory but these 'files' contents are made up of subdirectory entries, each of 32 bytes just as if they were in the root directory. The difference here is that the number of entries is not limited to a fixed number of sectors or to a particular place on the disk, as they can appear anywhere on the disk's data tracks.

But how does DOS know that a particular 'file' is actually a subdirectory?

You may remember that stored in each directory entry, along with a file name and size etc, are its **attributes**. This is actually one byte, used by DOS as 8 bits, that store six types of information about each and every file, including of course subdirectories and volume labels. One bit is designated for each of these two 'special' types of files as well as for designating such file attributes as read-only, hidden, system or archive. I will describe these in more detail in a future article.

When DOS comes across a sub-directory bit which is set on, it knows to treat this 'file' as a directory. Its contents can then be listed as a directory and of course we can change to any of the files or further subdirectories referred to within it.

So we have now found that the number of subdirectories, and the number of files each contains, is limited only by the space on your disk. But do remember that to many sub-directory levels can make life unduly complex if you get too carried away.

Dot and double dot

We always find these two interesting entries at the top of each sub-directory. If you have not met them before then enter the Make Directory command `MD\SUBDIR`.

As described above, the root or parent directory has an entry for each of its subdirectories. For instance, you will now see something like this when you do a `DIR`. If you are not in the top directory then enter `CD\` (Change Directory to root): `SUBDIR <DIR> date time` `SUBDIR` looks just like any other file entry to DOS except that its file-size field is zero and the attribute byte marks it as a subdirectory.

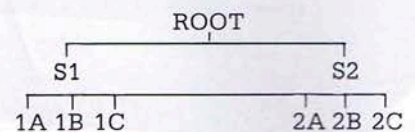
When `SUBDIR` was created, two special entries were placed in it by DOS. These have the filenames '.' and '..', and they act like entries for further subdirectories, but '.' refers to the present subdirectory itself while '..' refers to its parent directory. But what can we use them for, you might ask? We can actually change directories by using these dots. Try "`CD.`" while in `SUBDIR`. Oops! nothing happened. This was because it was just like entering `CD\` (Change Directory to root) while in root. The single dot

means 'we are here'. Now try "`CD..`" from `SUBDIR`. You will find you have changed to the directory above, in our case to the root directory. This is very handy if you are several sub-directories down and you want to move up one – you don't even have to type its name or those that precede it in the tree!

Moving sideways

Have you ever wanted to get from one subdirectory, at say the third level down, to another at the same level? Well '..' provides the way to do it.

We might have a directory tree that looks something like this:



Say you are now in subdirectory `S1` and you want to get to `S2`. The usual method is to enter `CD\S2` and you are there. But when you are in the third level at `1A` and want to get to `1C` you will have to enter `CD\S1\1C` to move up to the `ROOT` directory then down via `S1` to eventually get to `1C`. It looks easy enough with the tree diagram in front of you, but you usually have to remember much more complicated names for each directory.

What I would do is enter `CD..1C` and there I am. Go on, try it! It does work, but you may need to print out (or draw) your disk's 'family tree' until you get familiar with all its relationships! If you just have floppy disks then still try it on a spare disk just to get the hang of it.

There are still more uses for these dotty filenames. For instance, double dots can be used to get you to a deeper level. Say we are now in `S1` and we want to get to `2A`. Try using `CD..S2\2A` and there you are!

Of course your disk directory would not have subdirectory names like `SD1` or `2A`, as you could really get lost with them. It always pays to use names that mean something to you. By the way, do you remember the prompt commands I told you about several months ago? This is a good time to use `PROMPT pg` in your `AUTOEXEC.BAT` file as it will always tell you where you are. As we last changed to subdirectory `2A` then our prompt would look like `C:\S2\2A>`. If it doesn't, you can still enter `PROMPT` as a direct command and the `pg` will then take effect immediately and remain until you reboot.

Do you have a favourite short cut like those I have just described? Please drop me a line c/- *Bits & Bytes* and I will present them here.

Go Forth – multiply and divide

by Joe Colquitt

This series of articles was written with Commodore 64 6502/6510 in mind. Other 6502 machines (Apple, BBC, VIC 20 etc) will run examples if corrections are made to addresses. The C64 calls ML with SYS, other BASICs may use CALL, USR etc. If you'd like a copy of an assembler (with instructions) for the 64, drop me a disk or tape with sample save.

Included in the 6502 range of instructions are several for testing and manipulating individual bits in a byte. The need for this occurs quite frequently. As we've already seen, comparisons check bits in the Status Register. You may recall that BNE, for example, tests the Zero flag. 'Flag' in this instance is just a general term for bits in the Status Register, or any byte you reserve for recording events. They are still only on/off states of a bit.

6502 has several 'shift' instructions, used to multiply or divide the value of a byte by two, or to shove the value of a bit out of the byte or to bit 7/6 for testing. The two most common are ASL and LSR. Less frequently used are ROR and ROL. Diagrams 1-4 show how each instruction affects the byte and the Status Register. As with other instructions, they come in a variety of modes; direct, absolute, and indexed.

All of the afore-mentioned instructions affect the carry flag. Notice how after ASL, the carry flag assumes the value of what was in bit 7. The first ASL pushes a 0 into the carry, and after the second, the carry becomes the 1. The example shown simply performs 76×4 , the result being 48 units in \$C000, and a 256 in the Status Register. By using BCC or BCS, a byte paired with \$C000 for storage of 256's can be incremented by one. Example 1 shows how a number in the range 0-255 can be multiplied by two simply. Multiplication further than this needs employment of ROL and ROR, although $\times 3$ can be done as $\times 2$ then adding the original number to the product. Multi-byte maths will be covered shortly. The effect of LSR is slightly different to ASL, apart from the obvious i.e. one shifts left and the other shifts right. When bit 0 is moved out of the byte to the right, mathematically speaking, an implied .5 flag is created in the Carry, which can be examined when printing calculations. It only works with plain halving thought so is of limited worth. It could be used as a simple test for even/odd by checking the Carry state. When doing multiple shifts on a memory location (eg ASCII conver-

sions), time and space can be economised as in Example 3.

When using ROL and ROR, special care must be taken with regard to the Carry. This is because the bit result after ROL/ROR is directly influenced by the Carry status. For ROL, the Carry assumes bit 7's state, and bit 0 assumes the Carry's state. For ROR, the Carry gets bit 0's value, and bit 7 gets the Carry's value. It's unlikely you'll see these instructions in a non-mathematical situation, which is where they wield their greatest power. Examples 4/5 show a simple flow to multiply/divide a number by twos. There is no sign (+/-) preservation. Multiplications/divisions involving numbers other than powers of two, using shift-add, will be covered next.

As promised, here is a compilation

Note: other flags are set/cleared

ASL (arithmetic shift left)

eg ASL#\$C000 (#C000 originally #\$4C)

```

0 1 0 0 1 1 0 0    4C (76dec)
← 1 0 0 1 1 0 0 0    98 (152dec)
0 0 1 1 0 0 0 0    30 (48dec) carry=1

```

LSR (logical shift right)

eg LSR#\$C000 (#C000 originally #\$4C)

```

0 0 0 0 1 1 1 0    0A (10dec)
0 0 0 0 0 1 1 1    05 (5dec)
0 0 0 0 0 0 1 1    02 (2dec) carry=1

```

ROL (rotate left)

eg ROL#\$C000 (#C000 orig #\$65, C=0)

```

0 1 1 0 0 1 0 1    65 (101dec)
1 1 0 0 1 0 1 1    CB (203dec)

```

ROR (rotate right)

eg ROR#\$C000 (#C000 orig #\$65, C=0)

```

0 1 1 0 0 1 0 1    65 (101dec)
0 0 1 1 0 0 1 0    32 (50dec), C=1

```

Example 1: doubling over two bytes

eg 133*2

```

C000 B5 :133 dec (data low byte)
C001 00 : 0 dec (data high byte)
C002 CLC :clear indicator
C003 ASL#$C000 :shift left, double $C000
C006 BCC#$C005 :if <256 exit
C008 INC#$C001 :else high byte +1
C00B BRK :

```

Example 2: halving over two bytes

eg 99/2

```

C000 63 :99dec (data low byte)
C001 00 : 0dec (data high byte)
C002 CLC :clear indicator
C003 LSR#$C000 :shift right, halve $C000
C006 BCC#$C00B :if no bit pushed out exit
C008 DEC#$C001 :else '.5' created, Check
C00B : :$C001 for <0

```

of zero-page addresses (64/VIC) that are fairly safe for ML use. I use the term 'fairly' because I can't know what BASIC program you may be running with the ML. The following list assumes that BASIC is not being used. Consult your User Guide if there are any doubts. Areas such as tape logs and buffers are OK if you have a disk, and so on. To be sure that nothing is destroyed, a temporary store can be set up before calling the ML (eg LDA\$xx, STA\$temp) then restoring the zero-page address before exiting eg LDA\$temp, STA\$xx). LDA\$xx, PHA and PLA, STA\$xx are alternatives if you wish to use the stack.

Decimal: 2, 10, 12-19, 22-74, 146-159, 163-191, 195-196 and 248-255.

Hex: 02, 0A, 0C-13, 16-4A, 92-9F, A3-BF, C3-C4 and F8-FF.

Example 3: economising

12 bytes/24 cycles 10 bytes/16 cycles

```

ASL#$C000    LDA#$C000
ASL#$C000    ASL
ASL#$C000    ASL
ASL#$C000    ASL
ASL#$C000    STA#$C000

```

Example 4: 100×4 (400dec, 0190hex)

```

C000 64 :100 dec (lo byte)
C001 00 : 0 dec (hi byte)
C002 ASL#$C000 :multiply low*2
C005 ROL#$C001 :and hi (including Carry)
C008 ASL#$C000 :again
C00B ROL#$C001 :

```

Bit flow after each instruction. The carry value created by ASL is marked 1.

```

hi    lo
00000000 01100100 orig
00000000 11001000 ASL (carry=0)
00000000 11001000 ROL
↑
00000000 10010000 ASL (carry=1)
00000001 10010000 ROL result:
↑
hi=01 lo=90

```

Example 5: $1600/4$ (400dec, 0190hex)

```

C000 40 :1600=0640hex
C001 06 :
C002 LSR#$C000 :lo/2
C005 ROR#$C001 :hi/2, moving bit0
C008 LSR#$C000 :again
C00B ROL#$C001 :

```

```

00000110 01000000 orig
00000110 00100000 LSR
00000011 00100000 ROR
00000011 00010000 LSR
00000001 10010000 ROR result:
hi=01 lo=90

```


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Crossword No. 2 compiled by David Cass

CLUES

Across

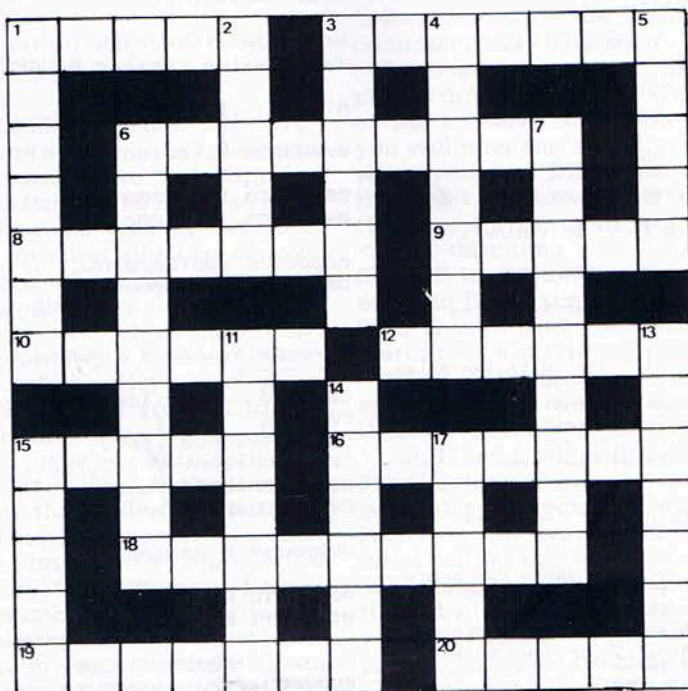
1. Santa -----: one of the major cities in Silicon Valley. (5)
3. Identification of a register or storage location in a computer memory. (7)
6. Set aside for special use, as for example a specialist wordprocessor. (9)
8. British designed, Korean made, this micro brand has sold well in Britain and Europe, and in NZ! (7)
9. A PC clone, available on the NZ market, sounding like a Mitsubishi car! (5)
10. Electric -----: British games software house, producer of the classic game Spindizzy. (6)
12. This form of electricity is one of the

deadly enemies in the computer environment. (6)

15. A pioneering firm in chip manufacture: made the 4004 and 8008 among others. (5)
16. Final recipient or destination of information going through a system. (3/4)
18. Signal to a receiving system or mechanism to prepare to receive data. (5/4)
19. Converted into digital or symbolic form according to a set of rules. (7)
20. Sometimes known as "return", this is a vital key on most PC keyboards. (5)

Down

1. Also known as an order, instruction or step, causing a computer to carry out an operation. (7)
2. Two of the essential logical operators (3/2)
3. Games of this type are usually "shoot-em-up" or simulations. (6)
4. A file, or collection of data in one of several prescribed arrangements, or a major unit of data storage and retrieval. (7)
5. One of the current US heavyweight word processing programs. (5)
6. Alternative name for floppy disks. (9)
7. Converts analog or pictorial data to discrete signal form. UK spelling! (9)
11. Trade name for the version of BASIC supplied with the PCW 8256 or 8512 from 8 across. (7)
13. Continuous frequency, capable of being modulated or impressed with a second signal. (7)
14. Used of a loop or routine embedded within another of similar structure. (6)
15. -----Writer: The dot matrix printer supplied under the Apple brand name. (5)
17. The device or mechanism that causes movement of a recording medium such as disc or tape. (5)



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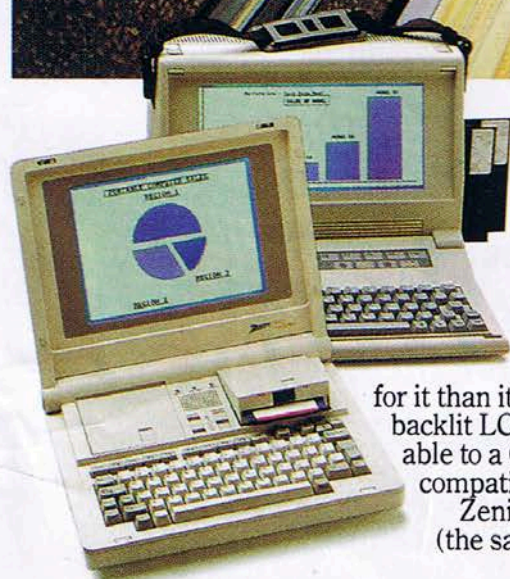
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